MOTIVATION IN U.S. LEARNERS OF MANDARIN AS A FOREIGN AND HERITAGE LANGUAGE

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ABSTRACT

Motivation provides not only the primary impetus to initiate second language (L2) learning, but also the driving force to sustain the long and often tedious learning process (Dörnyei, 2005). Dörnyei (2005, 2009) proposed the L2 motivational self system that is made up of ideal L2 self, ought-to L2 self, and L2 learning experience. Researchers have started to test the applicability of the model, and have found that the ideal L2 self correlates highly with intended learning effort, and the variables of the L2 Motivational Self System have been tested through many studies conducted with English as a foreign language learners. However, there is a lack of research testing the model with languages other than English. To fill this gap, this dissertation further tests L2 Motivational Self System in the context of learning Mandarin. It also examines possible differences of motivational factors between heritage and nonheritage language learners of Mandarin at the college level in the United States.

229 learners of Mandarin from 10 colleges in the United States participated in this study. Structural equation modeling was employed to investigate the causal relationships among the motivational factors and between these factors and criterion measures. The results showed ideal L2 self and L2 learning experience of the L2 Motivational Self System motivated learners to put more effort into learning Mandarin. However, the ought-to L2 self could not be seen as a strong predictor of intended effort of learning Mandarin. In addition, significant differences were found between heritage and nonheritage learners of Mandarin on ideal self, ought-to L2 self, L2 learning experience, intended effort and family influence. There was not a significant difference between the two groups on instrumentality (China and Mandarin). Pedagogical suggestions for teachers to motivate students to make more effort in learning Mandarin both in and outside of the language classroom are also discussed.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

As Pit Corder pointed out in 1967, "*given motivation*, it is inevitable that a human being will learn a second language if he is exposed to the language data" (p. 164; italics original). In the following decades, the role that motivation plays in the process of second language acquisition (SLA) has become an increasingly important topic of research.

Motivation provides not only the primary impetus to initiate second language (L2) learning, but also the driving force to sustain the long and often tedious learning process (Dörnyei, 2005). Because learning a foreign or second language is a lifelong process, "without sufficient motivation, even learners with the most remarkable abilities cannot accomplish long term goals and neither are appropriate curricula and good teaching enough on their own to ensure student achievement" (Dörnyei, 2005, p. 65).

Dörnyei (2005, 2009) proposed a model that conceptualizes L2 motivation within the framework of *self*, based on the psychological theory of self-discrepancy (Higgins, 1987). This system is made up of three components: ideal L2 self, ought-to L2 self, and learning experience. Researchers have started to test the applicability of the model, and have found that the ideal L2 self correlates highly with intended learning effort (e.g., Al-Shehri, 2009; Csizér & Lukács, 2010; Kormos & Csizér, 2008; Taguchi, Magid, & Papi, 2009). The variables of the L2 motivational self system have been tested through many studies conducted with English as a foreign language (EFL) learners in Asia and Europe (Dörnyei & Ushioda, 2009). However, there is a lack of research testing the model with languages other than English.

1.2 Statement of the Research Problem

Interest in learning Chinese has increased rapidly among American students in recent years. The enrollment in Chinese language courses in American institutions of higher education was the second fastest growing between 2002 and 2006 (Xiao & Wong, 2014). Between 2006 and 2009, enrollment grew by 18.2%, reaching 60,976, and Chinese became the seventh most studied language in U.S. colleges (Furman et al., 2010). The number of Chinese language classes offered in U.S. middle and high schools expanded four times between 1997 and 2008 (Rhodes & Pufahl, 2010). By 2016, there were 53,096 students enrolled in Chinese language courses in U.S. institutions of higher education, which was a change of 8529.1% from enrollment rates in 1958; only Korean and Arabic course enrollment grew more quickly in the same period (Modern Language Association [MLA], 2016). Also in 2016, enrollment in Chinese language classes in grades K–12 was 227,086 (American Council on the Teaching of Foreign Languages [ACTFL], 2017). In addition, in 2009, U.S. President Barack Obama pledged to send 100,000 students to China in the next four years (Liu, 2014), and in 2015, Obama and Chinese President Xi Jinping announced the "1 Million Strong" program, which sought to expand to one million the number of U.S. elementary and secondary school students learning Mandarin by 2020.

Despite its rapidly increasing popularity as a second/foreign language, Chinese has not received sufficient attention in SLA research (Zhou, 2012). In particular, L2 motivation research conducted with learners of Chinese is scarce (Liu, 2014). As reported by Boo, Dörnyei, and Ryan (2015), a significant majority (72.67%) of the motivation research conducted from 2005 to 2014 focused on the study of English as an L2 (Figure 1). This finding raises concerns about whether the theoretical basis of L2 motivation research might be affected by an L2-English-specific bias (Boo et al., 2017).

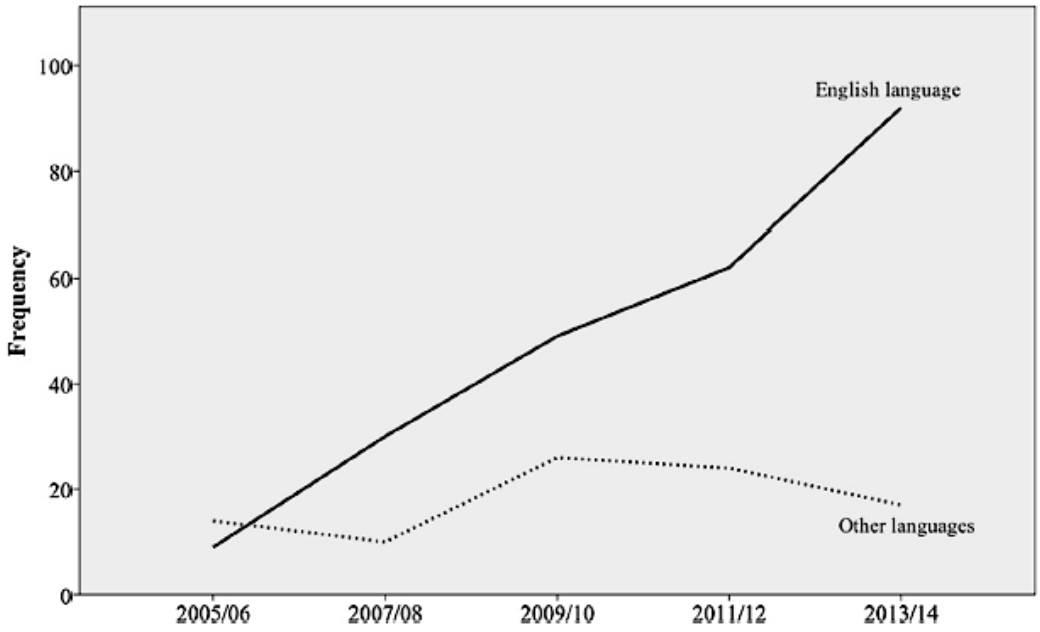

Figure 1. L2 motivation research, 2005–2014. Adapted from "L2 motivation research 2005–2014: Understanding a publication surge and a changing landscape" by Z. Boo, Z. Dörnyei., and S. Ryan, 2015. *System*, *55*, p.149.

According to the *Ethnologue* (2017), there are 960 million first language (L1) speakers of Mandarin Chinese, and 400 million L1 speakers of English; meanwhile, there are 193 million L2 speakers of Mandarin Chinese, and 990 million L2 speakers of English. As we know, English is a crucial international language and a widely used lingua franca. Although the total number of L1 and L2 speakers of Mandarin Chinese (1.15 billion) is only a little less than the total of L1 and L2 English speakers (1.39 billion), Mandarin is not an international language in the sense that English is. Moreover, in the United States, Mandarin Chinese is still categorized as a "less commonly taught language." Therefore, the findings of research on English as an L2 cannot simply be generalized to Chinese as an L2.

Furthermore, the linguistic features of Mandarin are very different from those of English. It is an isolating language that employs few inflections or case markers for learners to figure out

sets of rules to follow (Norman, 1988). Learners also find the tone system of Mandarin difficult to acquire. In addition, the unique Chinese orthography increases the difficulty of learning Mandarin. The linguistic challenges of Mandarin may influence learners' affective factors (Zhou, 2012), such as motivation. Therefore, the results of studies that focus on English as an L2 cannot be generalized to learners who are learning Mandarin as a second, heritage, or foreign language. It is obvious that research on Mandarin learner motivation is highly needed.

Furthermore, there are many ethnic Chinese in the United States, which calls for more research on Mandarin as a heritage language specifically. According to the 2012 U.S. Census (2013), 4.8% of the population spoke Chinese at home, making it the second largest minority language in the United States after Spanish (Zhang, 2015). The Migration Policy Institute (2017) reported that the population of Chinese immigrants in 2016 had reached 2.3 million, which is a more than six-fold increase since 1980. In fact, 5% of the approximately 44 million immigrants in the United States are Chinese; they are the third largest foreign-born group in the country, after immigrants from Mexico and India. Moreover, in 2010, there were about 479,000 children under the age of 18 residing in a household with at least one immigrant parent born in China (Migration Policy Institute, 2012). These statistics further support claims made in previous studies (e.g., Chao, 1997; Kondo-Brown & Brown, 2008; Shen, 2003; Zhou, 2012) that we need to pay more attention to heritage language learners in second language classrooms in general. In regard to Chinese heritage language learners in particular, they may differ greatly from nonheritage language learners not only in linguistic competence and cultural awareness, but also in the affective factors of learning a language, such as willingness to communicate in the L2 and motivation to learn it (Zhou, 2012). However, research on the teaching of Chinese as a heritage language has not yet received due attention (He, 2008; Li & Duff, 2008; Wang, 2005).

In sum, this dissertation study responds to the need for research on motivational factors among learners of Chinese Mandarin, as well as on differences in motivation between heritage learners and nonheritage learners of Chinese Mandarin.

1.3 Purpose of the Study

The present study intends to further test Dörnyei's (2015) L2 motivational self system in the context of learning Mandarin. It also examines possible differences of motivational factors between heritage and nonheritage language learners of Mandarin at the college level in the United States based on the theoretical framework of the L2 self system.

By investigating causal relations among attitudinal and motivational factors, the study aims to provide theoretical evidence about L2 motivation in Mandarin as well as pedagogical suggestions for teachers to motivate their students to make more effort in learning Mandarin both in and outside of the language classroom.

The study recruited participants from Mandarin classes at 10 colleges in the United States. All data were collected in the spring, summer, and fall of 2017. The participants were required to complete a questionnaire. There are two versions of the questionnaire, one online and the other paper-based. The number of participants who completed all of the questions on the survey was 240. Hence, 240 participants were included in the data analysis and discussion. The study employed structural equation modeling (SEM; Byrne, 2010) to examine the causal relationships among the motivational factors and between these factors and criterion measures. SEM was applied through Analysis of Moment Structure (AMOS; Arbuckle, 2017). The Statistical Package for the Social Sciences (SPSS) was used to investigate the differences in all factors between heritage and nonheritage language learners. The reliability and validity of the survey were also calculated through SPSS.

1.4 Organization of the Dissertation

This dissertation is organized into six chapters. Chapter 1 highlights the importance of motivation in language learning and explains the need for research on motivation in Mandarin as a second language. The chapter introduces the concept of L2 motivation and major frameworks of previous research. It then describes the purposes of the present study and the procedure of data collection. Finally, it outlines the dissertation to guide readers through the study.

Chapter 2 reviews the literature on motivation research and on heritage language learning. First, it describes the development of L2 motivation research in SLA. The chapter also looks at research on heritage and nonheritage learners of Chinese Mandarin. Next, it discusses the strengths and limitations of current motivation research on Chinese as an L2. Research questions are presented at the end of the chapter. In Chapter 3, the methods employed to answer the research questions are described. The study's setting, participants, research instruments, and procedures for data collection and analysis are reported.

Chapter 4 present and discuss the results of the study. Chapter 5 concludes the study, proposes pedagogical implications, points out limitations, and provides suggestions for future studies on the L2 motivational self system.

CHAPTER 2

LITERATURE REVIEW

2.1 Motivation Research in SLA

As introduced in Chapter One, for more than forty years researchers have actively sought to answer this complicated question: "How and why does a learner decide to take on the journey of studying an L2, and how does he/she maintain the effort?" (Takahashi, 2013, p. 18).

2.1.1 The Socio-educational Model and Integrativeness

The most notable initial impetus for L2 motivation research came from two Canadian social psychologists, Wallace Lambert and Robert Gardner, and their associates in the 1950s (Dörnyei & Ushioda, 2009). Gardner's *socio-educational model of second language acquisition* is not an elaborate model but a schematic outline of how motivation is related to other individual difference variables and language achievement (Figure 2.1; Gardner, 1985, 2001; Gardner & Lambert, 1972). As Figure 2.1 shows, in this model language achievement is influenced by integrative motivation and language aptitude, as well as a number of other factors. "Integrative motivation" is defined as the motivation "to learn a second language because of positive feelings toward the community that speaks that language" (Gardner, 1985, pp. 82–83).

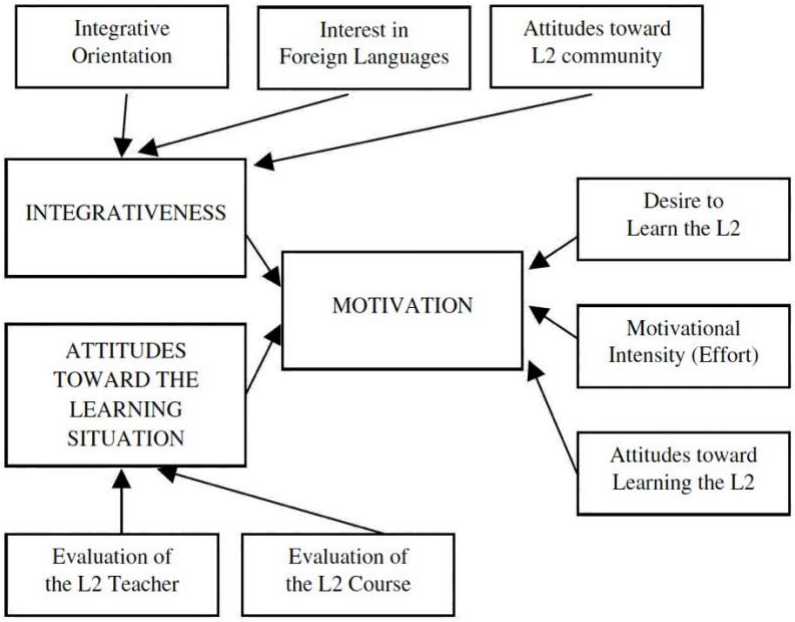

Figure 2.1. Gardner's (1985) socio-educational model of second language acquisition (p.17)

This empirically based construct has three main constituents: (a) integrativeness, which subsumes integrative orientation, interest in foreign languages, and attitudes toward the L2 community, reflecting the "individual's willingness and interest in social interaction with members of other groups" (Gardner & MacIntyre, 1993, p. 159); (b) attitudes toward the learning situation, which comprises attitudes toward the language teacher and the L2 course; and (c) motivation, defined as effort, desire, and attitude toward learning.

As shown in Figure 2.2, Tremblay and Gardner (1995) extended the socio-educational model, expanding Gardner's (1985) social-psychological construct of L2 motivation by adopting a broader vision of motivation (Dörnyei, 1998). In this revised model, motivation is described as consisting of motivational behavior and adaptive attributions (or "motivational antecedents")

(Dörnyei, 1998; Lee & Kim, 2008). According to this framework, motivational behavior is shaped by goal salience, valence, and self-efficacy, which are influenced by language attitudes.

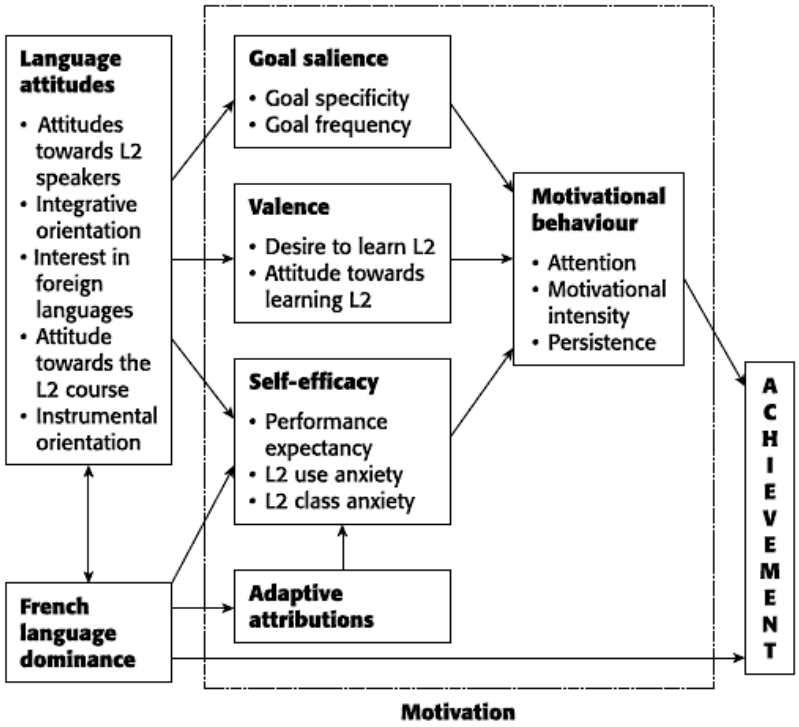

Figure 2.2 Extension of the socio-educational model (Tremblay & Gardner, 1995; slightly modified after Dörnyei, 2001b, p. 54)

In 2001, Gardner introduced a newer model (Figure 2.3), which has two classes of variables; integrativeness and attitudes toward the learning situation influence motivation to learn a second language, while motivation and language aptitude have an influence on language achievement. Gardner characterized the concept of "integrativeness" as follows:

> Integrativeness reflects a genuine interest in learning the second language in order to come close to the other language community. At one level, this implies an openness to, and respect for other cultural groups and ways of life. In the extreme, this might involve complete identification with the community (and possibly even

withdrawal from one's original group), but more commonly it might well involve integration within both communities. (p. 5)

According to Gardner (2001), "attitudes toward the learning situation" refers to attitudes toward any aspect of the situation in which the language is learned. "Motivation" is the driving force in any situation in which (a) the motivated individual expends effort to learn the language, (b) the motivated individual wants to achieve the goal, and (c) the motivated individual will enjoy the task of learning the language (p. 6).

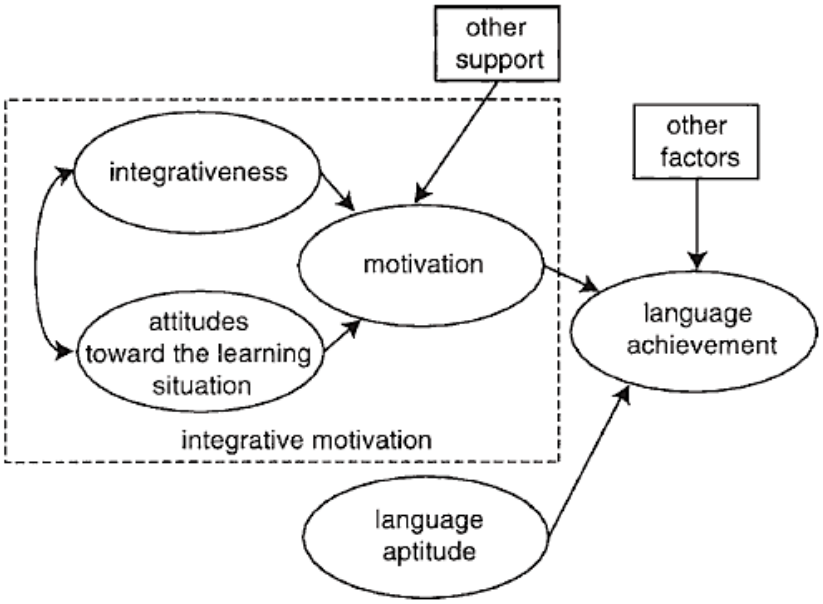

Figure 2.3 The integrative motive in Gardner's (2001) socio-educational model of second language acquisition (p. 4)

Gardner's motivation model dominated the L2 field for more than four decades (e.g., Dörnyei, 2001; Gardner, 2001; MacIntyre, 2002). Nevertheless, the model received criticism from many scholars due to its limitations. For instance, it has been criticized for having no applicability in foreign-language settings (Dörnyei, 1990b; Oxford, 1996); for the inappropriateness of polarizing integrativeness and instrumentality (Dörnyei, 1994b; Ely, 1986);

for its vague definition of integrativeness (Crookes & Schmidt, 1991); and for arbitrarily claiming that integrativeness is a more powerful predictor of achievement than instrumentality (Au, 1988).

Dörnyei (1994a) also pointed out that the research instrument that Gardner (1985) and his associates developed (the Attitude/Motivation Test Battery, AMTB) contains several items focusing on the learner's evaluation of the classroom learning situation, whereas Gardner's (1985) motivation model is based on general motivational components grounded in the social milieu rather than in the foreign language classroom.

Another criticism came from Dörnyei and Ushioda (2009), who argued that the model is outdated because it is based on the 20th century Canadian context that Gardner and his associates investigated. Today in many countries, the ownership of English "does not necessarily rest with a specific community of speakers" (Dörnyei & Ushioda, 2009, pp. 2–3). Further, with globalization, English is now considered an international language, and there may be no specific target L2 community for learners in EFL contexts, which undermines Gardner's notion of integrativeness (Takahashi, 2013).

2.1.2 Self-determination Theory and Intrinsic Motivation

In the late 1970s, after more than two decades of the socio-educational model's domination of the field, another influential theory of human motivation was developed by Edward Deci and Richard Ryan, both psychologists at the University of Rochester in the United States (Ortega, 2009). According to their *self-determination theory* (SDT), all human beings have an innate tendency toward growth and integration (Takahashi, 2013). This tendency interacts with social contexts that either "nurture or impede the organism's active nature" (Deci & Ryan, 2002, p. 6).

In contrast to the socio-educational model, the SDT does not treat motivation as a singular construct. According to Ryan and Deci (2000), the SDT examines what motivates a person at any given time, and make distinctions between different types of motivation and their consequences. Deci and Ryan (1985) introduced a self-determination continuum, which includes three categories of motivation: intrinsic motivation, extrinsic motivation, and amotivation. The continuum runs from the most autonomous or "self-determined" to the least self-determined, reflecting the qualities of different types of motivation (Takahashi, 2013). In the SDT, intrinsic motivation derives from people's innate need for competence and self-determination. When a person is intrinsically motivated, he or she engages in behaviors that are self-initiated by choice and largely sustained by inherent enjoyment in the activity (Ortega, 2009). On the other hand, when an individual is facing threats or even simply controlling language, rewards, deadlines, surveillance, and exams, his or her sense of self-causation and autonomy will be low, which means he or she is extrinsically motivated (Vansteenkiste et al., 2006). In some extreme, dysfunctional cases, learners may suffer from amotivation when they fail to see any internal or external value to their actions (Ortega, 2009).

2.1.3 Dörnyei's Three Levels of Motivation Components

As Dörnyei (1994a) argued, Gardner's socio-educational model might be less relevant for foreign language learners. Due to the lack of experiences with the target language community, foreign language learners are unlikely to be committed to integrating with it (Yu, 2015). Therefore, foreign language learners' instrumental motivation is generally higher than their integrative motivation. Dörnyei (1994a) also asserted that "the exact nature of the social and pragmatic dimensions of L2 motivation is always dependent on who learns what languages

where" (p. 275). For these reasons, and influenced by the SDT, Dörnyei (1994a) introduced a three-level framework that reflects the L2 learning process (Table 2.1).

Table 2.1

Components of Foreign Language Learning Motivation (Dörnyei, 1994a, p.280*)*

LANGUAGE LEVEL	Integrative Motivational Subsystem Instrumental Motivational Subsystem
LEARNER LEVEL	Need for Achievement Self-Confidence • Language Use Anxiety • Perceived L2 Competence • Causal Attributions • Self-Efficacy
LEARNING SITUATION LEVEL	Interest
Course-Specific Motivational Components	Relevance Expectancy Satisfaction
Teacher-Specific Motivational Components	Afflictive Drive Authority Type Direct Socialization of Motivation • Modelling • Task Presentation • Feedback
Group-Specific Motivational Components	Goal-orientedness Norm & Reward System Group Cohesion Classroom Goal Structure

As indicated in the table, the language level focuses on orientation and motives related to various aspects of the L2 (e.g., the culture the L2 conveys, the community in which the L2 is spoken, etc.). This level can be described in terms of two general subsystems that refer to Gardner's model: the integrative and the instrumental motivational subsystems (Dörnyei, 1994a). An example of motivation at the language level could be the potential usefulness of proficiency in a language in a particular community (Wen, 2011).

The learner level refers to affective and cognitive factors related to personality traits (Dörnyei, 2003). Two motivational components can be identified at this level: need for achievement and self-confidence. Self-confidence may include language anxiety, perceived L2 competence, attributions about past experiences, and self-efficacy (Dörnyei, 1994a). This level considers motivation as a function of cognition (Yu, 2015).

The learning situation level is made up of intrinsic and extrinsic motives and the motivational conditions of three areas (Dörnyei, 1994a, pp. 279–280):

1. Course-specific motivational components: These include the syllabus, the teaching materials, the teaching method, and the learning tasks, which are well described by Crookes and Schmidt's (1991) four motivational conditions of interest, relevance, expectancy, and satisfaction.
2. Teacher-specific components: These center on the affective drive to please the teacher, authority type, and direct socialization of student motivation, and refer to whether teachers actively stimulate learners' motivation via modeling, task presentation, and feedback.
3. Group-specific motivational components: These include goal-orientedness, the norm and reward system, group cohesion, and the classroom goal structure.

2.2 The L2 Motivational Self System in SLA

Dörnyei (2005) outlined the L2 motivational self system as the basis of a new approach to conceptualizing L2 motivation within a framework centered on the notion of the "self." According to Dörnyei and Ushioda (2009), there are two main sources of inspiration for the system: the possible self theory in psychology and Gardner's (2001) socio-educational model and integrativeness, discussed above.

2.2.1 Possible Selves and Self-discrepancy Theory

As pointed out by Dörnyei (2009), "traditionally, a person's self-concept has been seen as the summary of the individual's self-knowledge related to how the person views him/herself at present" (p. 11). On the other hand, possible selves represent individuals' ideas of what they might become in the future (Markus & Nurius, 1986). Three types of possible selves were proposed by Markus and Nurius (1986, p. 954): "ideal selves that we would very much like to become," "selves that we could become," and "selves we are afraid of becoming."

Because "the ideal self has a definite guiding function in setting to-be-reached standards" (Dörnyei, 2009, p. 13), it is obvious that the learner's ideal self is particularly important. Tory Higgins and his associates did a great deal of research on the ideal self (e.g., Higgins, 1987, 1998; Higgins et al., 1985; Higgins et al., 1994). According to Higgins's (1987, 1996) self-discrepancy theory, people are motivated to reach a condition where their self-concept matches their personally relevant self-guides. Namely, motivation in this sense involves the desire to reduce the discrepancy between one's actual self and the projected behavioral standards of the "ideal self" and "ought self." He defined the ideal self as "the representation of the attributes that one would ideally like to possess (i.e., representation of hopes, aspirations, or wishes) and the ought self as "the representation of attributes one believes one ought to possess (i.e., representation of someone else's sense of duties, obligations or moral responsibilities)" (Dörnyei, 2009, p. 13).

2.2.2 L2 Motivational Self System

As Dörnyei and Ushioda (2011) observed:

Within L2 research, integrativeness/integrative motivation had been an influential

> concept ever since it was first introduced by Gardner and Lambert in 1959, but over the past decade there has been an increasing concern about several aspects of its theoretical basis and explanatory power in varied learning environments… The second theoretical development took place in psychological research of the self, leading to a gradual convergence of self-theories and motivation theories in mainstream psychology. (pp. 79–80)

In response to these limitations of the socio-educational model and in light of Higgins's (1987, 1996) self theory, Dörnyei and his associates called for a general rethinking of integrativeness through a project that used a large-scale longitudinal survey of Hungarian students' attitudes to learning foreign languages spanning the period from 1993 to 2004 (Dörnyei & Csizér, 2002; Dörnyei et al., 2006). Through three successive waves of data collection (in 1993, 1999, and 2004), Dörnyei and his associates involved over 13,000 learners, using a survey that inquired into their attitudes toward learning five target languages: English, German, French, Italian, and Russian. The researchers employed structural equation modeling (SEM), and generated the model presented in Figure 2.4. The model was found to be remarkably stable across time and languages (Dörnyei, 2009). As can be seen in the figure, integrativeness plays a key role in L2 motivation in this model. The two immediate antecedents of integrativeness are attitudes toward L2 speakers, and community and instrumentality. Dörnyei then used the possible selves approach described earlier to explain these findings:

> Looking at "integrativeness" from the self perspective, the concept can be conceived of as the L2 specific facet of one's ideal self: if our ideal self is like to become is proficient in the L2, we can be described in Gardner's theme of the emerging new theory was the equation of the motivational dimension that has

traditionally been interpreted as “integrativeness/ integrative motivation” with the Ideal L2 Self. (Dörnyei, 2009, p. 27)

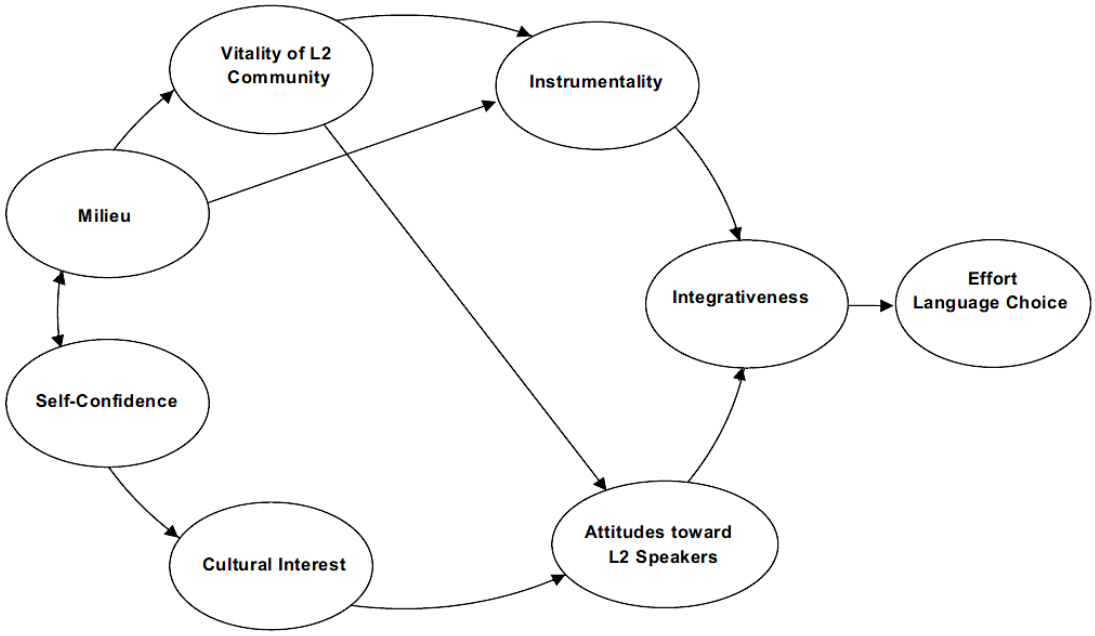

Figure 2.4. Schematic representation of Dörnyei et al.’s (2006) L2 motivational self system model (p.90).

Dörnyei and Csizér (2002) also commented on the salience and multifaceted composition of the integrative motivation factor in their data, and speculated that the process of identification that had been theorized to underpin integrativeness might be better explained as an internal process of identification within the person’s self-concept, rather than identification with an external reference group (p. 453). To further develop this speculation, Dörnyei (2005) drew on the psychological theory of possible selves and proposed a new conceptualization of L2 motivation, leading to his proposal of the L2 motivational self system.

According to Dörnyei (2009, p. 29), this system is made up of three components:

1. Ideal L2 self, which is the L2-specific facet of one’s ideal self: If the person we would like to become speaks an L2, the ideal L2 self is a powerful motivator to learn the

L2 because of the desire to reduce the discrepancy between our actual and ideal selves. Traditional integrative and internalized instrumental motives would typically belong to this component.

2. Ought-to L2 self, which concerns the attributes that one believes one ought to possess to meet expectations and to avoid possible negative outcomes. This dimension corresponds to Higgins' "ought self" and thus to the more extrinsic (i.e., less internalized) types of instrumental motives.

3. L2 learning experience, which concerns situated, "executive" motives related to the immediate learning environment and experience (e.g., the impact of the teacher, the curriculum, the peer group, the experience of success).

The component of L2 learning experience reflects the main achievement of motivational studies in the 1990s, which was to recognize the motivational impact of the classroom learning situation, including the teacher, the curriculum, and the learner group (Dörnyei, 1994a, 2001b; Dörnyei & Ushioda, 2009; Liu, 2014; Ushioda, 2003). As Dörnyei explained (2009), "For some language learners the initial motivation to learn a language does not come from internally or externally generated self images, but rather from successful engagement with the actual language learning process (e.g., because they discover that they are good at it)" (p. 29). As Dörnyei and Ushioda (2011) summarized:

> The L2 Motivational Self System suggests that there are three primary sources of the motivation to learn a foreign/second language—the learner's vision of oneself as an effective L2 speaker, the social pressure coming from the learner's environment and positive learning experiences. (p. 86)

Over the past decade, the L2 motivational self system (Dörnyei 2005, 2009) has been successfully utilized in quantitative surveys in diverse environments for English learning such as China (e.g., You & Dörnyei, 2016), Germany (Busse, 2013), Hungary (Csizér & Lukács, 2010; Kormos & Csizér, 2008;), Pakistan (Islam et al., 2013), Saudi Arabia (Al-Shehri, 2009), and Sweden (Henry, 2009, 2010a).

Employing structural equation modeling (SEM), Taguchi et al. (2009) examined the causal relationships among motivational factors including the components of Dörnyei's (2005) L2 motivational self system in three EFL contexts in Asia: Japan, China, and Iran (Figure 2.5).

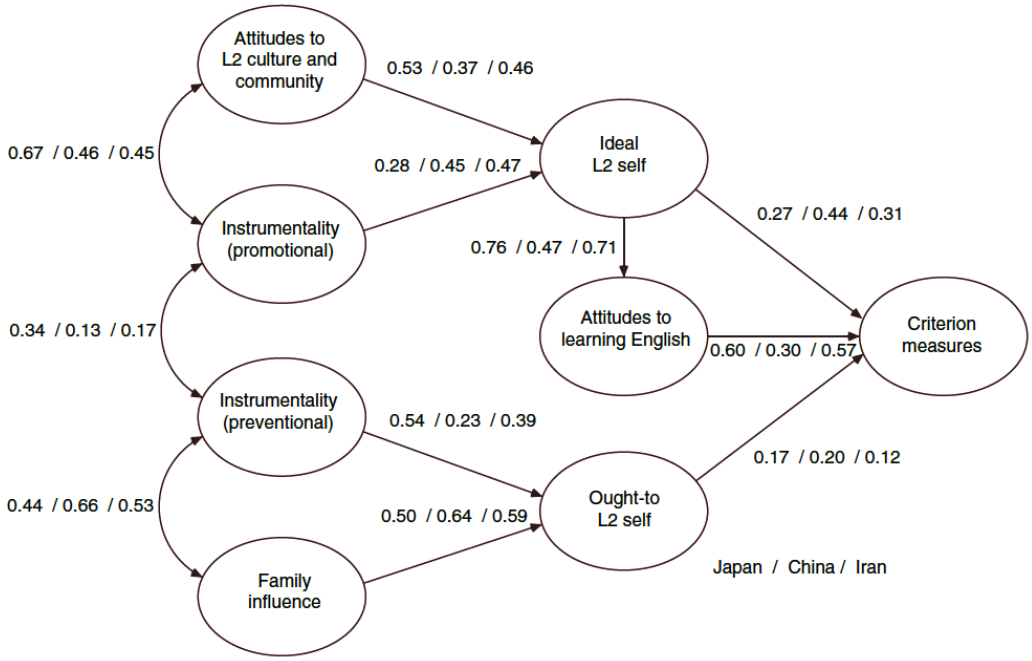

Figure 2.5. Comparison of coefficients among the Japanese, Chinese, and Iranian models (Taguchi et al., 2009. P.86)

About five thousand participants were involved in this survey study. The results of the study further confirmed the validity of Dörnyei's (2005) self system. In addition, the model suggests that (a) integrativeness can be relabeled as the "ideal L2 self" and (b) instrumentality can be classified into two types: promotional and preventional. Promotional instrumentality relates to

the ideal L2 self because it regulates positive outcomes, namely, goals and hopes of becoming professionally and personally successful in the L2. Preventional instrumentality is related to the ought-to L2 self as it controls negative outcomes, that is, those associated with the duties and obligations individuals perceive they have toward others.

As discussed in Section 2.1, one of the major criticisms of Gardner's model is that it is not relevant now that English has become an international language. Hence, there may be no specific English-speaking community for EFL learners to want to integrate into, which undermines the power of integrativeness as a motivation (Takahashi, 2013). English has become something that connects learners to foreign countries, and to all others who can communicate in English (Yashima, 2009). Therefore, Yashima (2002) "expands the notion of integrativeness to refer to a generalized international outlook or 'international posture'" (Dörnyei & Ushioda, 2009, p. 3).

The concept of an "international posture" (IP) has been tested and shown to affect language learners' motivation (Takahashi, 2013). In terms of the relationship between IP and ideal L2 self, Yashima (2009) provided an interesting example: If a teenager envisions an ideal self of being a medical doctor, this ideal self does not involve an L2 component. In other words, the teenager may learn English, but only to pass the college entrance examinations. However, developing IP may help the teenager produce possible selves who attend international medical conferences or work internationally, which may link to the L2 self. In addition, Kormos and Csizér (2008) actually found that IP was the best predictor of the ideal L2 self for their participants (secondary school students, university students, and adults).

2.3 Heritage Language Learners

As discussed in Chapter 1, the existence of a large ethnic Chinese population in the United States suggests the need for more research on Mandarin as a heritage language. To briefly recapitulate, in 2016, the population of Chinese immigrants in the United States was 2.3 million, and approximately 479,000 American children have at least one parent born in China (Migration Policy Institute, 2012, 2017). Moreover, Chinese ranks as the third most spoken language in the country after English and Spanish (Xiao & Wong, 2014). Hence, it is not surprising to see an increase in research dealing with Chinese heritage-language learners (e.g., Chao, 1997; He, 2006; He & Xiao, 2008; Kondo-Brown & Brown, 2008; Shen, 2003; Wen, 2011; Xiao & Wong, 2014; Zhou, 2012).

2.3.1 What Is a Heritage Language Learner?

Considerable variation exists in definitions of heritage languages and heritage language learners (He, 2010; University of California, Los Angeles, 2001; Wiley & Valdés, 2000; Xiao & Wong, 2014). Generally speaking, such definitions reflect two perspectives (Li & Duff, 2008): "(a) a perspective reflecting an ethnic, historical, or sociopolitical investment in the language; and (b) a perspective based on actual linguistic competence as well as familial affiliation" (p. 16). Zhou (2012) pointed out that heritage language learners may be defined in a broad or a narrow way. In an example of Li and Duff's (2008) first perspective and Zhou's (2012) broad definition, Fishman (2001) proposed that learners of ancestral indigenous, colonial, or immigrant languages, regardless of their prior knowledge or proficiency in the language, can all be recognized as heritage language learners. In other words, this is an ethnic orientation, which claims that a heritage learner can be defined as an individual who has a personal interest or involvement in an ancestral language (Fishman, 2001; Wiley, 2001). In contrast, Valdés's (2001)

definition exemplifies Li and Duff's (2008) second perspective and Zhou's (2012) narrow definition: "A heritage student is a student who is raised in a home where a non-English language is spoken, who speaks or merely understands the HL, and who is to some degree bilingual in English and the HL" (Valdés, 2001, p. 38).

Weger-Guntharp (2006) pointed out that a narrow definition such as "those whose home language is the HL" might exclude some language groups and individuals. Hornberger and Wang (2008) emphasized that there is no single profile of HL students, as they include a very heterogeneous population. Therefore, "regardless of institutional classifications and tracking, researchers and teachers should be made aware of the diversity and multifaceted identities brought into the classroom setting by language learners" (Li & Duff, 2008, p. 19). Hornberger and Wang (2008) offered an inclusive "ecological perspective," which acknowledges both ethnic/sociopolitical and linguistic definitions and accepts as a heritage language learner anyone who self-identifies as one, even, for example, those whose connection to the language is through marriage or adoption.

Kondo-Brown (2005) agreed that not all heritage language learners with someone in their family background who speaks the language are the same, and emphasized that heritage learners cannot be treated as a homogeneous group. She categorized heritage learners into three groups: (a) a member of the "descent group" has a heritage ethnic background but no parent or grandparent speaking the heritage language; (b) a member of the "grandparent group" has at least one grandparent but no parent speaking the heritage language; and (c) a member of the "parent group" has at least one parent speaking the heritage language. Kondo-Brown's study found that the majority of her parent group had higher self-perceived competence and believed they could perform a wider range of tasks from simple impersonal communication to narration, and that

they also actually performed significantly better than the other two groups of heritage language learners. The actual linguistic performance of the descent group and grandparent group was nearly identical to that of nonheritage learners. Zhou (2012) pointed out that Kondo-Brown's (2005) findings are particularly important in research on affective factors that assigns some participants to a "heritage" group for comparative purposes.

2.3.2 Who Are Chinese Heritage Language Learners?

In terms of defining Chinese heritage language learners, especially for the purposes of developing heritage language programs at the college level, proficiency-based definitions are important (Li & Duff, 2008). Carreira's (2004) definition of heritage language learners incorporates proficiency into its criteria, which are based on: "(a) the learner's place in the heritage language community, (b) the learner's personal connection to the heritage language and heritage culture through his/her family background, and (c) the learner's proficiency in the heritage language" (p. 2). This definition highlights the features of individual learners as having initially acquired the language through family and having at least some knowledge of the language before receiving any formal instruction in it. Nonetheless, even within a proficiency-defined Chinese heritage learners group, the learners may have a very uneven grasp of Chinese language, falling along a continuum from having very little knowledge to being highly proficient (Li & Duff, 2008). For instance, some Chinese heritage learners may have rather advanced conversational skills and cultural knowledge, but their literacy, grammar, and vocabulary as well as their writing skills typically remain underdeveloped. In addition, they may speak a Chinese dialect other than Mandarin.

The many definitions for heritage language learners arise from the difficulty of defining them. It is even harder to define heritage learners of Chinese, because "Chinese" is an umbrella

term that includes the many dialects spoken in China (Zhou, 2012). According to Norman (1988), the Chinese dialects can be divided into seven broad varieties: Wu, Xiang, Gan, Min, Yue, Hakka, and Mandarin (p. 181). Many of them are not mutually intelligible (DeFrancis, 1984; Norman, 1988). Xiao and Wong (2014) also pointed out that "the Han Chinese languages can be divided into six major varieties—Min, Wu, Yue (Cantonese), Gan, Hakka (Kejia), and Xiang and each group comprises many variations" (p. 593). Therefore, they continued, "Chinese" in "Chinese heritage language learners" does not necessarily or exclusively mean Mandarin (Xiao & Wong, 2014). Chao (1976) claimed that Chinese dialects are "practically different languages". In the same vein, it is often asserted that Cantonese speakers cannot understand Mandarin just as Dutch speakers cannot understand English, and French speakers cannot understand Spanish (Chao, 1976, p. 97; DeFrancis, 1984, p. 38). As Xiao and Wong (2014) argued, to treat Chinese as a single language with varying degrees of regional difference is to ignore the disparities among the dialects. However, to consider Chinese as a family of various languages is to ignore "the unique linguistic situation in China" and imply "extra-linguistic differences that in fact do not exist" (DeFrancis, 1984, p. 56).

The matter of dialects raises a problem for defining heritage language learners of Mandarin (Zhou, 2012). Unfortunately, in order to simplify the problem, most studies on the topic usually take an all-inclusive approach and consider that all Mandarin and dialect speakers are heritage language learners of Mandarin (Wong & Xiao, 2010, p. 153). He (2006) defined a Chinese heritage learner as "a language student who is raised in a home where Chinese is spoken and who speaks or at least understands the language and is to some degree bilingual in Chinese and in English" (p. 1). In Ke's (1998) study, Chinese heritage learners refers to bilingual speakers of English and Chinese, including Mandarin Chinese or one of the Chinese dialects,

such as Cantonese, Hokkian, or Southern Min (p. 94). Xiao's (2006) comparison of learner performance included participants with family language backgrounds in Mandarin, Cantonese, and Hokkian. Lü (2007) acknowledged the differences between Mandarin and other Chinese dialects: "In my judgment, however, Chinese [heritage language learners] in the United States are also heterogeneous and can be divided into subgroups according to the order of their heritage closeness to Mandarin Chinese and Chinese culture" (p. 21). She intended to include three subgroups in her study's heritage language learner group (i.e., Mandarin heritage learners, dialect heritage learners, and beginning heritage learners). However, due to the sample size, she ended up treating all heritage learners as one major group. Wong and Xiao (2010) investigated the identity issues of heritage language learners of Chinese through interviews with speakers of Mandarin, Cantonese, Shanghainese, and Taiwanese, among others. Zhou (2012) conducted a study on "L2 willingness to communicate," defining Chinese heritage learners as:

> those who have at least one parent [or grandparent] speaking Mandarin or a Chinese dialect at home or receive linguistic and/or cultural influence of Chinese at home regardless whether or not they have certain linguistic proficiency levels before formal instruction of Mandarin at school. (p. 56)

Considering these issues, separating heritage language learners into subgroups based on their dialect background seems necessary. However, the present study requires a very large sample of participants in order to perform statistical analyses of the power necessary to address the research questions. Therefore, the definition of heritage language learners of Chinese in the present study follows the definition of heritage language learners used by Zhou (2012), which is based on Kondo-Brown's (2005) findings: For the purposes of this study, heritage language learners of Mandarin Chinese are defined as students who have or had at least one parent

speaking Mandarin or a Chinese dialect at home and who have received Chinese linguistic and/or cultural influence at home, regardless of their linguistic proficiency level before they began to participate in formal instruction in Mandarin at school.

2.4 Motivation Research on Chinese as a Foreign and Heritage Language

As Liu (2014, p. 49) pointed out, "as a less commonly taught language in the United States, the status of Chinese is rapidly changing, and enrollments in Chinese courses in United States institutions of higher education have dramatically increased particularly since 2002." Therefore, interest in conducting research on the teaching and learning of Chinese as a foreign language is also increasing. However, most of the studies that have been conducted in this field are empirical. Some of the most well developed and researched areas include pedagogical approaches to teaching Chinese as a foreign language, Chinese curriculum design and program development, Chinese language education policy, and teaching Chinese literature (Chen, 2010). Meanwhile, only a small number of studies have focused on affective factors in L2 Chinese learning (Liu, 2014). Therefore, there is still much to be learned regarding L2 Chinese learners' attitudes, motivation, and identity. Furthermore, as mentioned in Chapter 1, Boo et al. (2015) found that over 70% of all empirical L2 motivation research conducted between 2005 and 2014 was on English. Moreover, Dörnyei and Al-hoorie (2017) noted that very little work has been done to investigate the motivational and affective profiles of Chinese heritage learners. And as Duff et al. (2013) also pointed out:

> Few studies of CAL (Chinese as an additional language) have provided an in-depth and contextualized analysis of individual learners' motivations and goals for choosing to study Chinese, their experiences and milestones in Chinese language and literacy acquisition, the social, linguistic, cultural or affective

characteristics of their development, the relationship between engaging in Chinese learning and their social, cultural and linguistic identities and selves, and their longer-term trajectories as Chinese learners and users. (p. 13)

This section reviews studies on Chinese language learners' motivation, summarizing these studies' theoretical frameworks and major findings, and noting gaps that indicate directions for future research.

2.4.1 Studies Using Gardner's Socio-educational Model

Wen (2011) used the socio-educational model proposed by Gardner (1985), the internal structure model (Csizér & Dörnyei, 2005), and the attribution theory (Weiner, 1985) to examine the similarities and differences of attitudes and motivation among three subgroups: bilingual, heritage motivated, and nonheritage learners. The results demonstrated that positive learning attitudes and experience were the factors most predictive of motivational magnitude (i.e., intended learning efforts in the present) and direction (i.e., intended continuation of study in the future). Instrumentality rated very highly across the three subgroups. In addition, heritage learners, especially Chinese bilinguals, seemed to be more likely to attribute their success in their language course to uncontrollable and/or external factors and their failure to internal factors.

Wen (2013) used the same set of data to further explore the interactions between language learning motivation, ethnicity, and language proficiency. The study results indicated that the non-Asian group had the most positive L2 Chinese learning experience and the strongest intention to continue Chinese studies among all ethnic groups. Instrumentality and positive L2 Chinese learning experience were significant predictors for persistence among beginning and intermediate learners, and self-confidence was the strongest predictor for persistence among advanced learners.

In order to gain insight into the complexities of language classrooms shared by Chinese heritage (CHLLs) and nonheritage language learners (non-CHLLs), Weger-Guntharp (2006) explored attitudinal differences between these two groups of learners in a single classroom setting by applying the two contrasting motivation approaches of Dörnyei (2000, 2002) and Norton (1995). The results indicated a motivational distinction between CHLLs and non-CHLLs: the CHLLs had high motivation for pursuing Chinese language learning as a means of connecting with a part of their ethnic identity. The CHLLs strongly agreed to the value of exploring one's heritage; for instance, one participant commented: "learning Chinese is important to me in order to be able to get to know the life of Chinese speaking people better" (Weger-Guntharp, 2006, p. 33). In addition, all the CHLLs considered their heritage as an economic and/or academic resource; they perceived Chinese proficiency as a key to their future success. The data also supported the model of Dörnyei (2000, 2002) and its concern with the co-constructed nature of motivation, namely that teachers, peers, and heritage learners all interact to affect classroom environments.

Yu (2014) explored relationships among identities, learning motivations, language behaviors, and views of heritage language maintenance with Chinese American heritage language learners of varying proficiency levels. The results demonstrated that proficiency level affected learners' preferences regarding using Chinese. Learners in the upper-level group demonstrated higher enthusiasm for practicing Chinese with their family members. Yu pointed out that higher willingness to practice Chinese led to better heritage language maintenance.

2.4.2 Studies Using Dörnyei's Three Levels of Motivation Components

Weger-Guntharp's (2006) and Yu's (2014) studies supported the L2 motivational self system with their findings that L2 learning experiences, namely the environment of learning and

the influence of teachers, peers, and learner groups, have a motivational impact on heritage learners of Chinese.

By integrating Gardner and Lambert's (1972) socio-educational model and Dörnyei's (1994) expanded theoretical model that specifically focuses on attitudinal motivation in the foreign language classroom, Lü (2007) investigated motivational differences and similarities between Chinese heritage language learners and nonheritage language learners. The results suggested that in college students' Chinese language learning, both integrative and instrumental motivations are important to their success. The study also indicated that the role each orientation plays in students' language learning should be understood within specific contexts and in light of individual students' particular cultural and linguistic backgrounds.

In another study, Lü and Li (2008) found both integrative and instrumental motivations to be important to students' self-confidence in their language proficiency, but integrative motivation to be more important to students' overall test scores. Moreover, heritage language students were more influenced by instrumental motivation than nonheritage students, and were less influenced by situational factors (e.g., the effects of teachers or of mixed classes). Lü and Li concluded that students' confidence in their Chinese ability with respect to the four skills could be affected by different kinds of motivation. Therefore, they suggested, different kinds of instruction are necessary to meet students' different needs (p. 102).

2.4.3 Studies Using Self-determination Theory

By investigating the motivational orientations of students of Asian and Asian-American backgrounds who learned Chinese at the university level in the United States, Wen (1997) tried to find out how their L2 Chinese learning motivation was associated with the desired learning outcomes. The results indicated that intrinsic interest in Chinese culture and the desire to

understand one's own cultural heritage were the initial motivation for most of the students. In addition, expectations of desired learning outcomes kept students going at the intermediate level. These motivational factors correlated significantly with desired learning outcomes.

Comanaru and Noels (2009) compared the motivational profiles of heritage and nonheritage Chinese learners to examine whether intrinsic and self-determined extrinsic orientations predicted motivated engagement in the learning process and in the language community. The results indicated that the heritage learners felt much more strongly than the nonheritage learners that they were learning Chinese because it was a central part of who they were. Moreover, they felt more pressure to learn Chinese either because of pressure from others or because of a self-imposed feeling that they ought to learn the language. Furthermore, heritage learners reported a stronger sense of relatedness to others in the class and to the Chinese community and culture than did nonheritage learners, and also reported greater frequency of contact with the community and more language use outside the classroom. Besides these differences, for both groups, a more self-determined orientation (i.e., identified, integrated, and intrinsic orientations) predicted greater motivational intensity and a stronger intention to pursue Chinese studies in the future.

Liu (2012) explored correlations among learners' individual variables of language proficiency level, motivations for learning Chinese, and language learning beliefs, along with variables such as gender, age, mother tongue, and perceptions of learning strategy use. The results indicated that heritage students had significantly stronger intrinsic motivation for learning Chinese, whereas nonheritage students had significantly stronger extrinsic motivation. In addition, heritage Chinese students' intrinsic motivation was significantly correlated with their compensation and affective strategies, whereas nonheritage Chinese students' intrinsic

motivation was significantly correlated with their memory strategies. Nonheritage language students' extrinsic motivation was significantly correlated with their social strategies—their second factor and their metacognitive strategies.

Wang (2010) examined how students' motivation to learn Chinese interacted with their ethnicity and language learning environment. The participants were nine third-graders: five heritage learners and four nonheritage learners. Through interviews and observation, Wang concluded that the heritage learners tended to have heritage-related language learning motivation and to be studying Chinese under pressure (e.g., parental pressure), whereas the nonheritage learners tended to have integrative motivation and a more positive perception of Chinese learning.

2.4.4 Studies Using the L2 Motivational Self System

A few studies have investigated some aspects of the L2 motivational self system proposed by Dörnyei (2005) in the context of Chinese language learning. Xie (2011) investigated the relationship between and among motivational factors using the model of the L2 self system. The study found significant correlations between (a) integrativeness and the ideal L2 self; (b) the ideal L2 self and motivational strength; (c) the ideal L2 self, the ought-to L2 self, instrumentality-promotion, and instrumentality-prevention; and (d) the ideal L2 self, international posture (IP), and willingness to communicate (WTC). A multivariate analysis of variance (MANOVA) found differences between the heritage and nonheritage language learners in six variables: motivational strength, ought-to L2 self, family influence, cultural interest, prevention, and international posture. The study supports previous studies on the theoretical legitimacy of the L2 motivational self system and suggests that the application of the L2 motivational self system can be extended to languages other than English. Xie included IP as a

variable to address how one relates oneself to international communities; IP applies to L2 motivational studies given that it couples with the L2 motivational self system to correct the deficiencies of the integrative motivation model. It is important to note, however, that the concept of IP suggested by Yashima (2002, 2009) emerged from the context of English as an international language. Xie (2011) noted that there is a large, worldwide population of Chinese speakers, and she adapted Yashima's (2009) questionnaire, "Scales Used to Explore International Posture and WTC," by changing the word "English" to "Chinese" throughout. As discussed previously, however, Chinese is not an international language in the same way that English is, so Xie's application of the IP questionnaire, with the single adjustment, to Chinese language learning settings is problematic. In addition, Xie's study was the first one testing the self system in a Chinese language learning context. Therefore, the validity and reliability of the findings need to be reconsidered.

Cai (2011) investigated the impact of an online learning community project on university L2 Chinese learners' motivation, and found that, compared with the ideal L2 self and ought-to L2 self, which are built up over a long period of time and therefore relatively stable, L2 learning experience is the most dynamic and fluid aspect of the self system.

Liu (2014) utilized the framework of the L2 motivational self system to investigate the motivation of L2 Chinese learners of various levels. The participants in the study were 130 American college students. Adopting a mixed-methods approach using a combination of questionnaires and interviews, Liu explored how L2 Chinese learners' language learning motivation is related to their self-perceived and desired identities. The study contributed to validating the L2 motivational self system in the L2 Chinese context, but has some limitations. The study did not compare heritage and nonheritage learners, but treated them as a single group.

And despite including a category of "self-perceived and desired ethnic identities and Chinese learning," Liu interviewed only three Chinese heritage learners. Yet she drew the conclusion that "self-perceived and desired ethnic identities had a significant impact upon one's L2 language learning choice, and in turn, the L2 learning experience might also influence and further shape one's self-perception" (p. 134). Although the intended aim of the study may have been to investigate the motivation of Chinese language learners in general, rather than exploring the differences or similarities between Chinese heritage and nonheritage learners, the small number of participants overall, as well as the very small number of heritage learners and limited interview data, undermine her generalization regarding the relationship between ethnic identity and language learning motivation.

Despite the limitations of these studies, their findings may help us better understand the relationships between and/or among motivational factors of ideal L2 self, ought-to L2 self, integrativeness, and instrumentality for L2 learners of Chinese. However, many questions remain. To better confirm Dörnyei's (2005) L2 motivational self system in the context of learning Mandarin, causal relationships between the motivational factors need to be investigated in this context. Moreover, it is also necessary to test its constructs with methods such as SEM to provide a clearer picture of the extent to which the motivational factors are related and can predict criterion measure, such as intentions and efforts regarding learning Mandarin.

In addition, although the concept of IP does not fit the context of learning Mandarin as a foreign or heritage language, this does not mean new concepts are not needed. After all, Mandarin has its unique linguistic character, as discussed in Chapter 1, and its unique dialect situation, as discussed earlier in this chapter. Furthermore, given China's rapid development and changing role in the world, no doubt the importance of Mandarin, the official language of China,

is also increasing. As stated in the *Ethnologue* (2017), Mandarin Chinese is the most spoken first language, and the second most spoken second language in the world. There are 960 million L1 speakers of Mandarin Chinese, and 400 million L1 speakers of English; meanwhile, there are 193 million L2 speakers of Mandarin Chinese, and 990 million L2 speakers of English. Given this situation, it seems worth reconsidering the motivational factor of "instrumentality (promotion)," which relates to opportunities for finding a job or getting promoted in the future. Previous studies on L2 Chinese learning motivation (e.g., Liu, 2014; Xie, 2011) have adopted survey items from earlier L2 motivation studies to assess the role of "instrumentality (promotion)" in participants' motivation. Some examples of such questionnaire items are: "Studying Chinese will help me get a good job" (Liu, 2014). However, such items may not fully capture the reasons or the genuine interests of Mandarin learners. For instance, some learners may have started to learn Mandarin because it is the most spoken language in the world. They will have seen the growing importance and potential of learning Mandarin, but still not have the specific goal of using it to find a job in the future. Clearly, there is a need for a specific construct to reflect the uniqueness of both China and Mandarin. Although Xie's (2011) attempt to employ IP was not ideal, as discussed earlier in this section, it is still worthwhile to explore suitable motivational constructs. Therefore, the present study intends to propose a new construct, "instrumentality (China and Mandarin)," (ICM, hereafter) to fill this gap. ICM is still a type of instrumentality that relates to the ideal L2 self, as it regulates positive outcomes, that is, the hope of becoming personally successful after learning the L2 (Mandarin). One may argue that because this construct is a type of instrumentality, it could be addressed by adding new survey items to the motivation questionnaire. However, I would argue that due to the unique characteristics of

both Mandarin and China, newly designed survey items representing this construct cannot be mixed with previous instrumentality items.

2.5 Research Questions

Given the state of the research on L2 motivation and heritage learners of Chinese Mandarin as reviewed in this chapter, the present study aims to answer the following research questions:

1. Do the newly designed survey items all test the new construct of instrumentality (China and Mandarin)?

2. To what extent are the motivational factors of ideal L2 self, ought-to L2 self, language learning experience, family influence, instrumentality (China and Mandarin), and intended effort related to learning Mandarin as a foreign and heritage language?

3. Are there differences between heritage and nonheritage language learners of Mandarin in the motivational factors of ideal L2 self, ought-to L2 self, L2 learning experience, family influence, instrumentality (China and Motivation), and intended effort?

CHAPTER 3

METHODOLOGY

This study collected data using a questionnaire in English (Appendix A). To answer the first research question, exploratory factor analysis (EFA) was used to confirm the extent of correlations found in the data, and in particular to test the newly designed questionnaire items for the study's proposed construct of instrumentality (China and Mandarin). AMOS was used to conduct SEM to answer the second research question. Multivariate analysis of variance (MANOVA) was adopted to answer the third research question.

3.1 Participants

The study recruited 249 participants from ten different universities across the United States: one each in Arizona, California, Connecticut, Georgia, Missouri, New Jersey, Vermont, and Washington, DC, and two in Illinois. Five are public universities, three are private universities, and two are liberal arts colleges. The participants had various Mandarin proficiency levels.

The questionnaire was made available online via Google Drive in the spring of 2017. Due to a very low response rate, however, in summer 2017, the survey was transferred to a paper-based questionnaire. Of the 249 participants, nine filled out the questionnaire online, and the other 240 filled out the paper-based questionnaire. In the fall semester of 2017, the link to the online questionnaire was sent to Mandarin instructors at the two universities in California and Arizona. The paper-based questionnaires were mailed to Mandarin instructors at the universities in Connecticut, Georgia, Missouri, New Jersey, Vermont, and Chicago by the researcher. At the private university in Washington, DC, the questionnaires were delivered to Mandarin instructors directly by the researcher. Participants who received the paper-based survey either finished the

questionnaire in class or brought it back to school after completing it at home. Each participant who submitted a paper-based survey to their Mandarin instructors was given a small gift from the researcher. The Mandarin instructors then either mailed or delivered the answered paper-based surveys to the researcher.

After data screening (see section 3.4.4), the initial sample of 249 participants was reduced to a final sample of 229 participants. These 229 participants included 145 (63.3%) females, 83 (36.3%) males, and one (0.4%) who preferred not to include their gender information. As shown in Table 3.1, the minimum age of the participants was 17 years old and the maximum age was 55 years old (M = 20.00; SD = 3.62). Some of the participants had been exposed to Mandarin since birth because their family members spoke Mandarin at home or they were born in China. Among the participants, the latest age for starting to hear or use Mandarin was 51 years old. The average age of the participants at their first exposure to Mandarin was 10.96 years (SD = 7.85). According to the participants' self-report, 172 (75.1%) were born in the United States, 31 (13.5%) in China, and 26 (11.4%) in other countries (see Table 3.2).

Table 3.1

Age of Participants

Items	N	Min	Max	M	SD
Age	229	17	55	20.00	3.62
Age of first exposure to Mandarin	229	0	51	10.96	7.85

Table 3.2

Birth Countries of Participants

Items	Frequency	Percent
U.S.	172	75.1
China	31	13.5
Other countries	26	11.4
Total	229	100.0

Participants were also asked to report their strongest language(s) before and after the age of five: 127 (55.5%) reported English, 13 (5.7%) reported Mandarin, 12 (5.2%) indicated one of the Chinese dialects, 30 (13.1%) reported both English and Mandarin, and six (2.5%) claimed both English and one of the Chinese dialects as their strongest language before five. The reported Chinese dialects include (a) Yue: Cantonese, which is mainly spoken in Guangdong Province in Mainland China and Hong Kong; Taishanese, which is mainly spoken in some regions in Guangdong Province in China; (b) Min: Fuzhounese, which is mainly spoken in northeastern regions in Fujian Province in China; Teochew, which is mainly spoken in some eastern coastal regions of Guangdong Province in China; and (c) Wu: Shanghai dialect, which is mainly spoken in the city of Shanghai in China. In addition, some participants also reported speaking other languages, or English and another language, or Mandarin and another language before the age of five (see Table 3.3). These languages include Arabic, Bahasa Indonesia, Filipino, French, Hmong, Italian, Japanese, Korean, Samoan, Spanish, Vietnamese, and Yoruba. However, regarding the strongest language after the age of five, 202 (88.2%) of the participants reported English to be their strongest language. One (0.4%) participant reported a Chinese dialect as his or her strongest language. Eight (3.8%) participants reported English and another language to be their strongest language after age five: for one, English and Mandarin; for one, English and

Cantonese; and for 18 (7.9%) participants, English and another language. None of the participants reported Mandarin to be their strongest language after age five.

Table 3.3

Participants' Strongest Language

Items	Frequency	Percent
Before age five		
English	127	55.0
Mandarin	14	6.1
Chinese dialects	12	5.2
English and Mandarin	31	13.4
English and Chinese dialects	6	2.6
English and other language	18	7.8
Other language	18	7.8
Mandarin and other language	5	2.2
Total	229	100.0
After age five		
English	202	88.2
Chinese dialects	1	.4
English and other language	8	3.5
Other language	18	7.9
Total	229	100.0

To get a better understanding of the language background of the participants and to differentiate the heritage group and nonheritage group, the survey also collected information on family members speaking Mandarin or a Chinese dialect. The majority, 147 (64.2%), had no family members speaking Mandarin or a Chinese dialect, while 82 (35.8%) reported having family members speaking Mandarin or a Chinese dialect. In the present study, "family members" refers to mothers, fathers, maternal grandparent(s), and paternal grandparent(s). As shown in Table 3.4, 61 (74.4%) participants reported that their mother, father, maternal grandparent(s), and paternal grandparent(s) spoke Mandarin or a Chinese dialect at home; six (7.3%) participants reported that their father and paternal grandparents spoke Mandarin or a Chinese dialect at home; 15 (18.3%) participants reported that their mother and maternal grandparent(s) spoke Mandarin

or a Chinese dialect at home. As mentioned in Chapter 2, for the purposes of this study, heritage language learners of Chinese are defined as students who have or had at least one parent speaking Mandarin or a Chinese dialect at home and who have received Chinese linguistic and/or cultural influence at home, regardless of their linguistic proficiency level before they began to participate in formal instruction in Mandarin at school. Therefore, based on this self-reported data, 82 of the participants were heritage language learners of Mandarin Chinese.

Table 3.4

Language Background of Family Members

Items	Frequency	Percent
Mother, Father, Maternal Grandparent(s), Paternal Grandparent(s)	61	74.4
Father, Paternal Grandparent(s)	6	7.3
Mother, Maternal Grandparent(s)	15	18.3
Total	82	100.0

3.2 Instrument

This is a quantitative study. Its instrument is a questionnaire with two sections: The first section comprises questions about the participants' background information, and the second comprises Likert-scale items measuring motivational factors (Appendix A).

The purpose of the background information section is to classify participants into heritage and nonheritage groups. As explained in Chapter 2, this study's definition of heritage learners of Mandarin follows the definitions suggested by Kondo-Brown (2005) and Zhou (2012). The first questions in this section are to collect biographic data, including gender and age. It then asks about the participants' birth country, strongest language before and after 5 years of age, any family members speaking Mandarin or a Chinese dialect, and age when they first started to hear

or use Mandarin Chinese. The participants are also asked to provide information regarding their previous experiences of learning Chinese, as well as their past traveling experience in regions where Chinese is spoken.

The second section of the questionnaire includes 40 questions: 36 adapted from three published L2 motivation questionnaires (Liu, 2014; Taguchi et al., 2009; You & Dörnyei, 2016) and four newly designed to test the new proposed construct of instrumentality (China and Mandarin). These 41 Likert-scale items aim to measure the following seven factors of L2 motivation:

1. *Ideal L2 self*: This factor refers to the "L2-specific facet of one's ideal self" (Dörnyei, 2005, p. 106). In the present study, if the person one would like to become speaks Mandarin, the "ideal L2 self" may function as a motivator for learning Mandarin in order to reduce the discrepancy between the current self and the future ideal self. For instance, if a person imagines himself or herself successfully giving a public speech in Mandarin in the future, then the desire to close the gap between the current self who is learning Mandarin and the future self whose Mandarin proficiency level is good enough to give such a speech becomes a powerful motivator.

2. *Ought-to L2 self*: According to Dörnyei (2009, p. 29), this factor concerns the attributes that a person believes he or she ought to possess to meet expectations and to avoid possible negative outcomes. In the present study, an example of the ought-to L2 self working as a motivator of learning Mandarin would be when a learner agrees that learning Mandarin is important because he or she wants to gain the approval of his or her family.

3. *L2 learning experience*: This factor "concerns situated, 'executive' motives related to the immediate learning environment and experience" (Dörnyei, 2009, p. 29). In the context of

learning Mandarin, this factor may refer, for example, to whether a learner really likes the actual process of learning Mandarin, looks forward to Mandarin classes, and so forth.

4. *Family influence*: This factor refers to whether and to what extent L2 learners' family members such as parents influence their experience of studying the L2. In the present study, this factor is about the family influence on learning Mandarin. It could be positive if, for example, a learner's image of how he or she wants to use Mandarin in the future is mainly influenced by his or her parents. It could also be negative if, for example, a learner feels a great deal of pressure from his or her parents to learn Mandarin.

5. *Intended effort*: Because motivation is an antecedent of behavior rather than of achievement, it is only indirectly related to learning outcomes/achievement (Papi, 2010). In the present study, the factor of intended effort is used as a criterion measure to examine the amount of effort learners intend to put into learning Mandarin. An example is if a person plans to study Mandarin diligently even if he or she is not required to do so.

6. *Instrumentality (promotion)*: This factor measures "the regulation of personal goals to become successful" (Taguchi et al., 2009, p. 74). An example goal in the present study would be of learning Mandarin to find a better job in the future, or to get a degree or a scholarship.

7. *Instrumentality (China and Mandarin)*: This new construct is proposed by the present dissertation to investigate whether a motivator for learning Mandarin could be related to the development of China and the unique status of Mandarin. While it may sound very similar to the traditional factor of instrumentality (promotion), this construct does not refer to professional or school-related goals. Higgins (1987, 1998) highlighted that there is a promotion focus in ideal self-guides that are concerned with hopes, aspirations, advancement, growth, and accomplishments. As discussed earlier, there are two characteristics that make Mandarin

different from English: its large number of L1 and L2 speakers worldwide, and its role as the official language of China, which has become one of the largest global economies. It is true that the growth of the economy in China has created job opportunities for L2 Mandarin speakers, but given the fact that English is a global lingua franca, the ability to speak Mandarin is not a precondition for working in China or in China-related positions because the ability to speak English fulfills the language requirements for most positions in multinational or international companies or organizations. The question, then, is what the promotion focus in future self-guides would be about if it does not concern professional/career advancement. The special role of China in the world and the uniqueness of Mandarin may provide the answer, or at least the starting point for answering this question. Lacking a very clear image of what one's future holds does not conflict with having hopes for the future. For instance, a person may decide to learn Mandarin not for the sake of a career goal, but because the person believes learning Mandarin will bring him or her something positive in the future. Such a belief is rationale even if the benefit is undefined because Mandarin is so widely spoken and such an important language given China's key role in today's world economically and politically.

All 40 items on the questionnaire use a 6-point Likert scale (1 point: strongly disagree; 6 points: strongly agree). A 6-point scale was used rather than a 5- or 7-point scale because of the concern that some respondents might use the middle category (i.e., 3 on a 5-point scale or 5 on a 7-point scale) to avoid making a real choice. It has been found that providing an accurate answer often involves a fair amount of cognitive work, and therefore individuals who are less motivated to expend cognitive effort tend to take such a "satisfying" strategy (Dörnyei, 2010; Krosnick, 1999; Krosnick, Judd, & Wittenbrink, 2005). Brown (2001) also found that some respondents tend to "sit on the fence" on Likert questions (p. 41), meaning that they tend to choose a neutral

"non-option" option or middle category if it is available. Brown therefore suggested the use of even numbers of options to force respondents to provide a definite opinion on each question.

3.3 Pilot Study

To test the reliability of the questionnaire, a pilot study was conducted in the spring semester of 2017. The participants were 21 students taking Chinese Mandarin courses at a private university in the United States. Table 3.5 shows the reliability of each variable based on the pilot study's results.

Table 3.5

Reliability of motivational variables

Variables	N	K	Cronbach's alpha
Ideal L2 self	21	7	.783
Ought-to L2 self	21	7	.716
L2 learning experience	21	7	.752
Family influence	21	5	.761
Intended effort	21	6	.799
Instrumentality (promotion)	21	5	.534
Instrumentality (China and Mandarin)	21	4	.772

As presented in Table 3.5, the reliability coefficient for instrumentality (promotion) was only .534, which indicates poor consistency among the five items. However, considering the small number of participants, as well as the empirical support of previous studies (Liu, 2014; Taguchi et al., 2009; You & Dörnyei, 2016), the items on instrumentality (promotion) were kept in the questionnaire.

3.4 Data Analysis

IBM SPSS Statistics 25 and IBM SPSS Amos 25 were used to conduct the data analysis for this study.

3.4.1 Exploratory Factor Analysis

Tabachnick and Fidell (2013) pointed out that:

> Principal components analysis (PCA) and factor analysis (FA) are statistical techniques applied to a single set of variables when the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another. Variables that are correlated with one another but largely independent of other subsets of variables are combined into factors. (p. 660)

Therefore, to answer Research Question 1, whether the four newly designed survey items all test the new construct of instrumentality (China and Mandarin), an exploratory factor analysis (EFA), mentioned as one type of FA by Tabachnick and Fidell (2013), was conducted through IBM SPSS Statistics. The rationale for choosing EFA over PCA is based on Brown's (2009) discussion:

> In sum, the primary differences between PCA and EFA are that (a) PCA is appropriate when researchers are just exploring for patterns in their data without a theory and therefore want to include unique and error variances in the analysis, and EFA is appropriate when researchers are working from a theory drawn from previous research about the relationships among the variables and therefore want to include only the variance that is accounted for in an analysis (thereby excluding unique and error variances) in order to see what is going on in the covariance, or common variance. (p. 29)

Besides exploring whether the four variables test the same factor of instrumentality (China and Mandarin), EFA was also necessary to find out that these four variables do not load on the factor of IP, and that the five variables of IP do not load on the factor of instrumentality (China and

Mandarin). Thus, instrumentality (China and Mandarin) and instrumentality (promotion) are two different constructs.

3.4.2 Structural Equation Modeling

Another type of FA is confirmatory factor analysis (CFA; Tabachnick & Fidell, 2013). CFA is most often used in the advanced stages of the research process to test a theory about latent processes, and researchers mainly perform it through structural equation modeling (SEM), which combines multiple regression, factor analysis, and path analysis (Tabachnick & Fidell, 2013). SEM is a correlational analysis, which is similar to a multiple regression examining covariance between variables. It also includes path diagrams depicting causal relationships between variables and factor loading of the paths. Although SEM is a correlational analysis, Mueller and Hancock (2010) pointed out that SEM is best used for a priori studies. In other words, "postulated causal relations among all variables in the hypothesized model must be grounded in theory and/or empirical research" (Byrne, 2012, p. 161).

As introduced by Byrne (2012), there are two models in SEM: a measurement model and a structural model. The links between the latent variables (motivational factors in the present study) and their observed measures (the survey items) are depicted in the measurement model. On the other hand, the structural model depicts the links among the different latent variables.

To answer Research Question 2 and to explore the relationships between different motivational factors, the initially hypothesized model in Figure 3.1 was proposed, based on the L2 motivational self system and previous empirical research (Csizér & Kormos, 2009; Papi, 2010; Taguchi et al., 2009). There are six latent variables: Ideal L2 Self, Ought-to L2 Self, L2 Learning Experience, Intended Effort, Family Influence, and Instrumentality (China and Mandarin). The seven hypothesized causal paths are shown by single-headed arrows, and the

only correlational path, between Instrumentality (China and Mandarin) and Family Influence, is shown by a double-headed arrow. This double-headed arrow indicates an unanalyzed relationship, showing only a covariance between the two variables with no implied direction of effect (Tabachnick & Fidell, 2013).

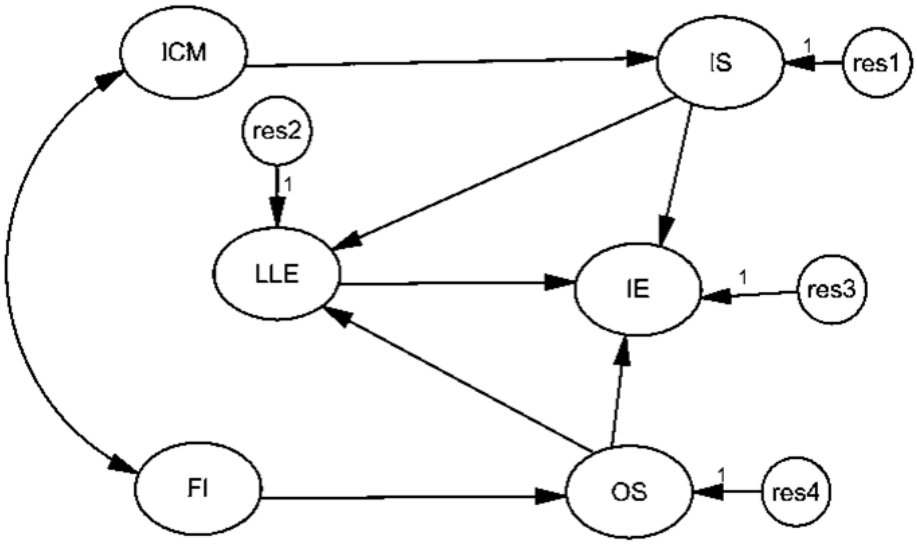

Figure 3.1 The hypothesized model

Notes: ICM: Instrumentality (China and Mandarin); IS: Ideal L2 Self; LLE: L2 Learning Experience; IE: Intended Effort; FI: Family Influence; OS: Ought-to L2 Self

Three paths lead from the Ideal L2 Self, the Ought-to L2 Self, and L2 Learning Experience to Intended Effort, because these three constituent components of L2 motivation can logically be expected to result in effortful behaviors. The two paths from Ideal L2 Self and Ought-to L2 Self to L2 Learning Experience are based on the models of Papi (2010) and Taguchi et al. (2009). The two paths that lead from Instrumentality (China and Mandarin) to Ideal L2 Self and from Family Influence to Ought-to L2 Self are based on Dörnyei (2009) and the empirical

study of Taguchi et al. (2009). Figure 3.2 shows the full model with the relationships of all the observed variables (survey items) to each of the latent variables (motivational factors).

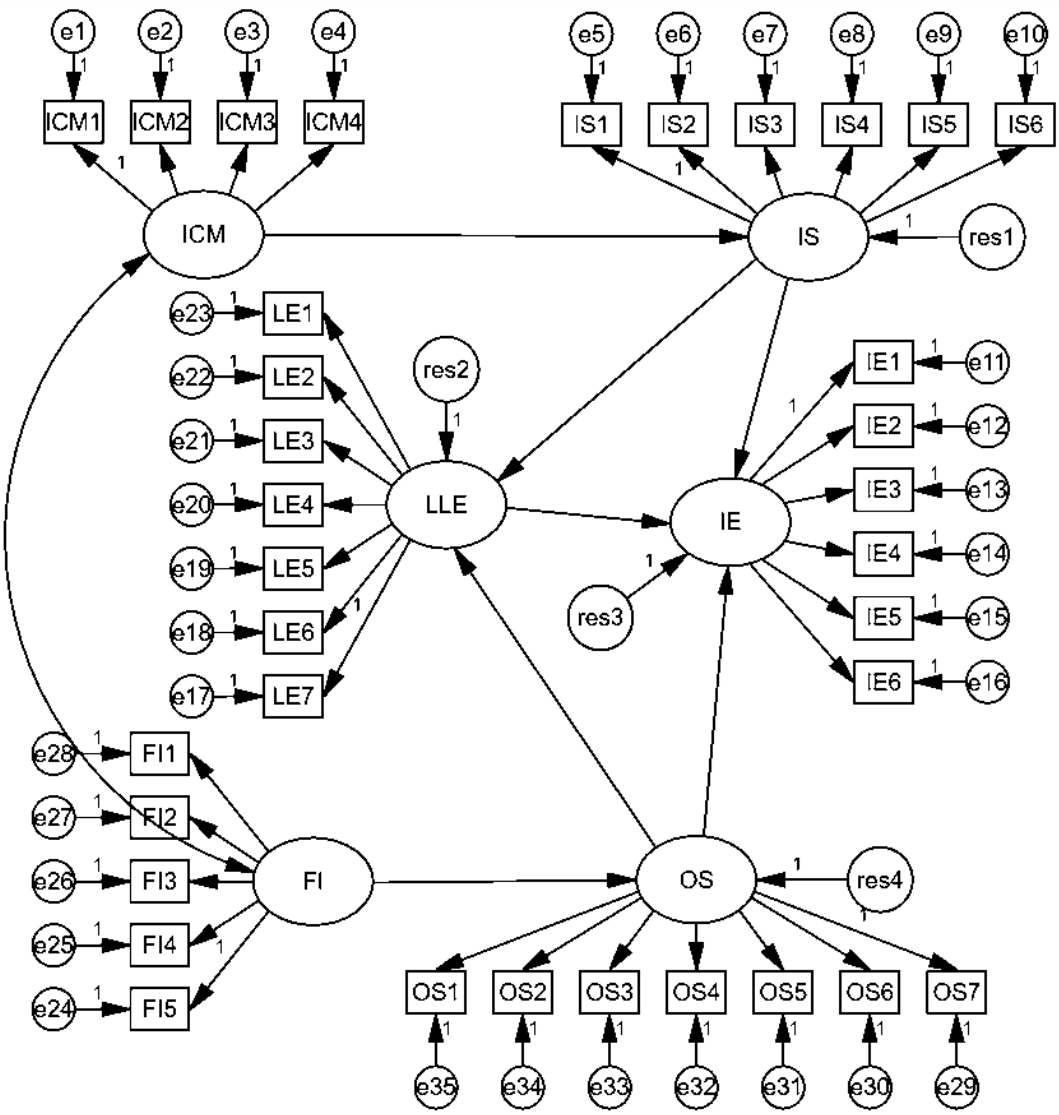

Figure 3.2 The hypothesized model with unobserved variables

Note. Item numbers see Appendix B

3.4.3 Multivariate Analysis of Variance

To answer the third research question, this study employed multivariate analysis of variance (MANOVA) to investigate the differences between heritage and nonheritage learners of Mandarin. MANOVA is a generalization of analysis of variance (ANOVA) that is useful when there are several dependent variables, and it tests whether mean differences among groups on a combination of these dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2013). The present study aims to find out whether there are differences in the dependent variables of ideal L2 self, ought-to L2 self, L2 learning experience, family influence, and instrumentality (China, Mandarin), so MANOVA was employed. MANOVA was chosen over a series of ANOVAs to avoid inflated Type I errors due to multiple tests of correlated dependent variables (Tabachnick & Fidell, 2013).

3.4.4 Data Screening

The data were first screened to ensure that they met the assumptions of the chosen statistical analyses. As Tabachnick and Fidell (2013) pointed out that when screening and preparing the data, there should be no univariate or multivariate outliers, and the assumptions of normality, linearity, multicollinearity, and singularity should all be met.

First, the researcher checked all the submissions' responses. Four cases with incomplete questionnaires were deleted. According to Tabachnick and Fidell (2013), cases with missing values can be dropped if they seems to be a random subsample of the whole sample (p.97). Then two other cases were deleted. One of the participants claimed he was born in China, but did not provide the age when he moved to the United States; he also said he first started to hear Mandarin at the age of three, but Mandarin was the language he spoke before the age of five and was also his strongest and dominant language now. If all the information this participant

provided is true, it is possible that he is a native speaker of Mandarin who does not belong to the target population of this study. Therefore, the data of this participant was excluded. The other participant claimed he started to hear Mandarin at the age of 10 but he spoke Mandarin before the age of five. Due to these conflict information, the data of this participant was also deleted. Next, univariate descriptive statistics were checked and no out-of-range values were found. In addition, all means and standard deviations were plausible. As pointed out by Tabachnick and Fidell (2013), cases with standardized scores, z scores, in excess of 3.29 ($p < .001$, two tailed test) are potential univariate outliers. Three univariate outliers were detected and then dropped from analyses. The descriptive statistics, skewness, and kurtosis of the 40 items are presented in Appendix C. Based upon the views of Kline (2005), a +2/-2 cut-point was used to evaluate skewness, while +5/-5 cut-point was used to evaluate kurtosis. All the skewness and kurtosis figures were within the range, so no transformation of the scores was necessary. Multivariate outliers then were examined using Mahalanobis distance ($p < 0.001$). Four multivariate outliers were detected and dropped from the analyses. Multicollinearity and singularity were checked and all the correlations were smaller than 0.90 which met the suggested threshold (Tabachnick & Fidell, 2013). After this data screening, the final number of participants is 229.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Research Question 1

Do the newly designed survey items all test instrumentality (China and Mandarin)?

Dörnyei (2009) claimed that people naturally want to be professionally successful, and therefore instrumental motives related to career enhancement are logically linked to the ideal L2 self (p. 28). According to Higgins (1987, 1998), there are two focuses of people's self-guides: the promotion focus with ideal self-guides, and the prevention focus with ought-to self-guides. The promotion focus is concerned with hopes, aspirations, advancement, growth, and accomplishments. The prevention focus, on the other hand, is related to safety, responsibilities, and obligations. Taguchi et al.'s (2009) study reported higher correlations of the ideal L2 self with instrumentality-promotion than with instrumentality-prevention, and the opposite pattern of ought-to L2 self correlations. In other words, the traditional construct of instrumentality can indeed be divided into two distinct types, one relating to the ideal L2 self, the other to the ought-to L2 self. As explained in Chapter 2, the concept of instrumentality (promotion) may not fully capture the reasons or the genuine interests of Mandarin learners who do not have the specific goal of using Mandarin to achieve professional success. Moreover, Mandarin has a unique linguistic character, and its importance is increasing along with the rapid development of China. Some Mandarin learners are no doubt inspired by the growing importance and potential of China and its official language, Mandarin. Hence, Mandarin as a second or foreign language is very different from English as a second or foreign language, and there is a need for a specific construct to reflect the uniqueness of both China and Mandarin. For this reason, the current study proposes the new construct of instrumentality (China and Mandarin). It should be noted,

however, that although this new construct is different from instrumentality (promotion), it still falls into what Higgins (1987, 1998) described as the promotion focus of ideal self-guides in that it is concerned with hopes, aspirations, advancement, growth, and accomplishments. The present study's four new survey items (see Appendix A) aim to investigate this specific motivational construct for learners of Mandarin. An EFA was employed to test whether the responses to the four newly proposed items load onto the same factor as each other, but do not load onto the same factor as the traditional instrumentality (promotion) items. The software used to conduct the EFA was IBM SPSS Statistics 25.

Using the principal axis factoring extraction method and the varimax rotation method, the EFA was performed using nine survey items: the four newly designed items and five items to measure instrumentality (promotion) from previous studies (Liu, 2014; Taguchi et al., 2009; You & Dörnyei, 2016). As can be seen in the scree plot in Figure 4.1, two factors with eigenvalues larger than one were found. Moreover, Table 4.1 shows that the nine survey items loaded onto two factors. The four newly designed items all loaded high onto factor one, and the other five items loaded onto factor two. The first factor was identified as instrumentality (China and Mandarin), as proposed, and the second factor was identified as instrumentality (promotion). Together, these two factors explained 51% of the total variance. Instrumentality (China and Mandarin) explained 38.4% of the total variance, and instrumentality (promotion) explained 12.6% of the total variance. The Cronbach's alpha for instrumentality (China and Mandarin) was 0.885, which indicates strong internal reliability for this factor.

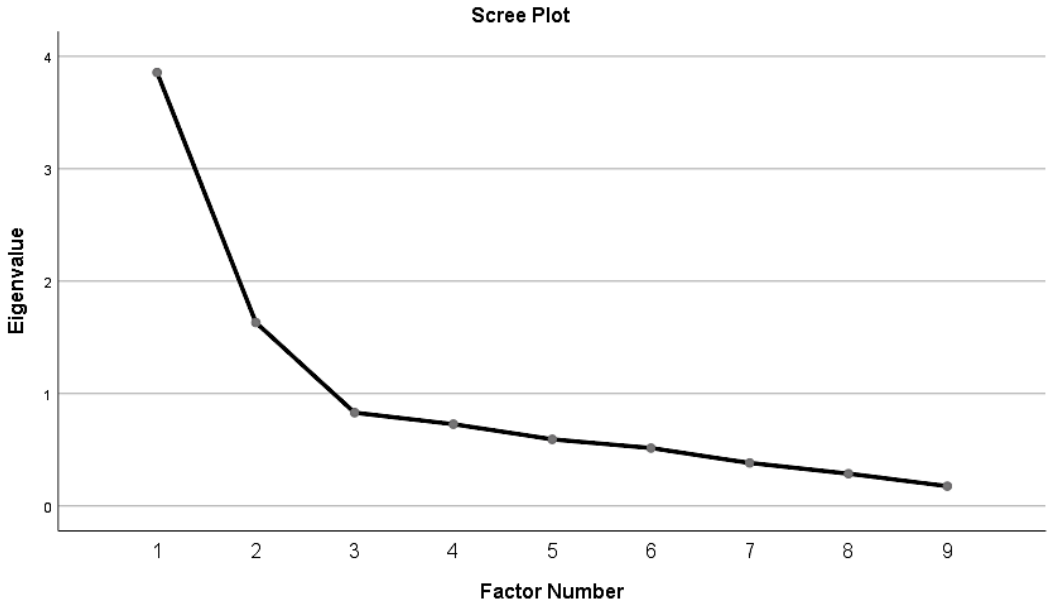

Figure 4.1. Scree plot of the EFA for new survey items and instrumentality (promotion) items.

Table 4.1
Rotated Factor Loadings

	Factor		h^2
	1	2	
ICM1	**.709**	.159	.527
ICM2	**.740**	.164	.575
ICM3	**.873**	.217	.809
ICM4	**.846**	.243	.775
IP+1	.253	**.666**	.507
IP+2	.117	**.763**	.596
IP+3	.049	**.531**	.284
IP+4	.147	**.470**	.243
IP+5	.233	**.470**	.275
% Variance Explained	.384	.126	.510

Note. ICM: instrumentality (China and Mandarin); IP+: instrumentality (promotion)

4.2 Research Question2

To what extent are the motivational factors of ideal L2 self, ought-to L2 self, language learning experience, family influence, instrumentality (China and Mandarin), and intended effort related to learning Mandarin as a foreign and heritage language?

According to Byrne (2010), the hypothesis of SEM argues for the validity of specified causal linkages among variables of interest. Therefore, to answer the second research question, SEM was conducted to explore the relationships between the different motivational factors of interest to this study. The initially hypothesized model (see Figure 3.2) was grounded in the theoretical framework of the L2 motivational self system, as well as the results of previous empirical research (Papi, 2010; Taguchi et al., 2009). IBM SPSS AMOS 25 was used to conduct SEM. IBM SPSS Statistics 25 was used to implement the subsequent EFA to generate suggestions for model respecification.

4.2.1 Model 1

Model Identification

As Arbuckle (2017) pointed out, in SEM analyses, and in the use of AMOS in particular, a critically important assumption is that the data are multivariate normal. Byrne (2010) suggested that a kurtosis value equal to or greater than seven can be considered to be indicative of early departure from normality. As Table 4.2 shows, no variables in the hypothesized Model 1 had a kurtosis value of greater than seven. However, the assumption of multivariate normality still had been violated because multivariate kurtosis = 88.548, and critical ratio (c.r.) = 13.165. Kline (2005) suggests that multivariate kurtosis values should be smaller than 10 to be acceptable. Bentler (2005) suggests the multivariate z-statistic (i.e. the critical ratio) should be less than five to meet the assumption of normally distributed data. However, Kline (1998) pointed out that one

can still use the Maximum Likelihood (ML) method of estimation despite violating the assumption of multivariate normality. In an ideal situation, the Satorra-Bentler (S-B χ^2) statistic would have been utilized. This keeps the estimation method when assumptions of multivariate normality are violated but makes an adjustment to the output to compensate for the nonnormality. However, the S-B χ^2 statistic is not available within the AMOS program. But based on a simulation study using AMOS with non-normally distributed data, Byrne (2010) suggests that ML method is acceptable. Therefore, this study still uses ML method of estimation.

A squared Mahalanobis distance was then computed to investigate whether any cases in the current dataset have scores substantially different from all the others. According to Byrne (2010), "This statistic measures the distance in standard deviation units between a set of scores for one case and the sample means for all variables (centroids)" (p. 106). No scores were found to be substantially different in the set of data in this study.

Table 4.2
Assessment of Normality of Hypothesized Model 1

Variable	min	max	skew	c.r.	kurtosis	c.r.
OS1	1.000	6.000	.428	2.644	-.547	-1.690
OS2	1.000	6.000	1.468	9.068	1.029	3.180
OS3	1.000	6.000	1.437	8.881	1.468	4.534
OS4	1.000	6.000	1.085	6.701	.496	1.532
OS5	1.000	6.000	1.231	7.607	.201	.622
OS6	1.000	6.000	.242	1.492	-1.055	-3.259
OS7	1.000	6.000	.498	3.078	-.957	-2.956
FI1	1.000	6.000	.920	5.681	.075	.232
FI2	1.000	6.000	-.321	-1.982	-1.095	-3.383
FI3	1.000	6.000	.749	4.628	-1.108	-3.423
FI4	1.000	6.000	1.116	6.894	.137	.422
FI5	1.000	6.000	1.041	6.429	-.180	-.557
IE6	1.000	6.000	-1.242	-7.675	.915	2.826
IE5	1.000	6.000	-.115	-.708	-.571	-1.763
IE4	1.000	6.000	-.686	-4.235	-.157	-.485
IE3	2.000	6.000	-.670	-4.141	-.351	-1.085
IE2	1.000	6.000	-1.278	-7.896	.733	2.263
IE1	2.000	6.000	-.723	-4.469	-.180	-.556
LE1	1.000	6.000	-.945	-5.841	.417	1.289
LE2	1.000	6.000	-.737	-4.555	.071	.218
LE3	1.000	6.000	-1.067	-6.594	.655	2.023
LE4	1.000	6.000	-.274	-1.694	-.814	-2.516
LE5	1.000	6.000	-.633	-3.913	.148	.457
LE6	2.000	6.000	-.897	-5.543	-.122	-.378
LE7	2.000	6.000	-1.460	-9.021	1.885	5.821
IS6	1.000	6.000	-1.076	-6.647	.541	1.673
IS5	1.000	6.000	-1.296	-8.009	1.143	3.532
IS4	1.000	6.000	.167	1.034	-1.196	-3.694
IS3	2.000	6.000	-1.556	-9.611	1.961	6.056
IS2	1.000	6.000	-1.009	-6.235	.445	1.374
IS1	1.000	6.000	-.201	-1.244	-1.129	-3.488
ICM4	1.000	6.000	-1.067	-6.594	.947	2.926
ICM3	1.000	6.000	-.803	-4.960	.042	.128
ICM2	1.000	6.000	-.887	-5.481	-.039	-.119
ICM1	1.000	6.000	-1.125	-6.948	.961	2.969
Multivariate					88.548	13.165

Note. Item numbers see Appendix B

The estimated covariance of each pair of variables is provided in Table 4.3. The largest covariance exists between the variables of family influence (FI) and ought-to L2 self (OS). When FI goes up by one standard deviation, OS goes up by 0.869 standard deviation. The second largest covariance is between L2 learning experience (LLE) and intended effort (IE). When LLE goes up by one standard deviation, IE goes up by 0.694 standard deviation. The third largest covariance is between ideal L2 self (IS) and LLE. When IS goes by one standard deviation, LLE goes by 0.626 standard deviation. When instrumentality (China and Mandarin) (ICM) goes up by one standard deviation, IS goes up by 0.472 standard deviation. When IS goes up by one standard deviation, IE goes up by 0.268 standard deviation. When OS goes up by one standard deviation, LLE goes down by 0.249 standard deviation. The parameter from OS to IE is not significant.

Table 4.3
AMOS Output for Parameter Estimates of Model 1

Parameters			Unstandardized Estimate	Unstandardized S.E.	Standardized Estimate	*p*
IS	<---	ICM	.609	.103	.472	<.01
OS	<---	FI	.528	.076	.869	<.01
LLE	<---	IS	.264	.041	.626	<.01
LLE	<---	OS	-.160	.045	-.249	<.01
IE	<---	IS	.160	.040	.268	<.01
IE	<---	OS	-.055	.042	-.061	.183
IE	<---	LLE	.980	.148	.694	<.01

ICM: instrumentality (China and Mandarin); IS: Ideal L2 Self; LLE:L2 Learning Experience; IE: Intended Effort; FI: Family Influence; OS: Ought-to L2 Self

Results of Model Fit

Model-fit indices are summarized in Table 4.4. The χ^2 value suggests that the data are significantly different from the hypothesized model ($p < 0.01$). This model fit index indicates that the initial model is not entirely adequate. However, as the χ^2 is very sensitive to sample size,

it tends to be statistically significant with a large sample size (Byrne, 2010). The Goodness-of-Fit Index (GFI) suggests that the model fit is less than ideal. GFI measures the relative amount of variance and covariance (Byrne, 2010, p. 77). The GFI is .784, which is below the acceptable range of model fit (GFI > .90). The Comparative Fit Index (CFI) suggests whether a model fits the data well; that is, whether the hypothesized model adequately describes the sample data. The CFI is .882, which is lower-than-ideal (CFI > .95). The root-mean-square error of approximation (RMSEA) takes into account the question: "How well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available?" (Browne & Cudeck, 1993, pp. 137–138). The RMSEA for Model 1 is .064, which again shows unacceptable errors of approximation in the population, and is also below the typical acceptable level of model fit (RMSEA < .05). In sum, the hypothesized model is reasonable, but some modifications might allow this study to achieve a more acceptable model fit.

Table 4.4

Goodness-of-Fit Indices of Model 1

	χ^2	*df*	GFI	CFI	RMSEA
Estimate	1063.452*	552	0.784	0.882	0.064

* $p < 0.05$

Model Respecification

The modification indices and the estimates from the AMOS output indicate several cross-loading observed variables. In addition, as shown in Figure 4.2, the factor loadings of some variables were not ideal, which means they were not sufficient to be interpreted. To solve this problem, an EFA was conducted to target the variables with lower factor loadings in the hope of reducing the number of observed variables and thereby increasing the power of the study.

The EFA used the direct oblimin rotation because in the SEM, correlations among latent variables were assumed. For the extraction method, principal axis factoring was used. The Kaise-Meyer-Olkin (KMO) value of this EFA was 0.896, which indicates an adequate sample size.

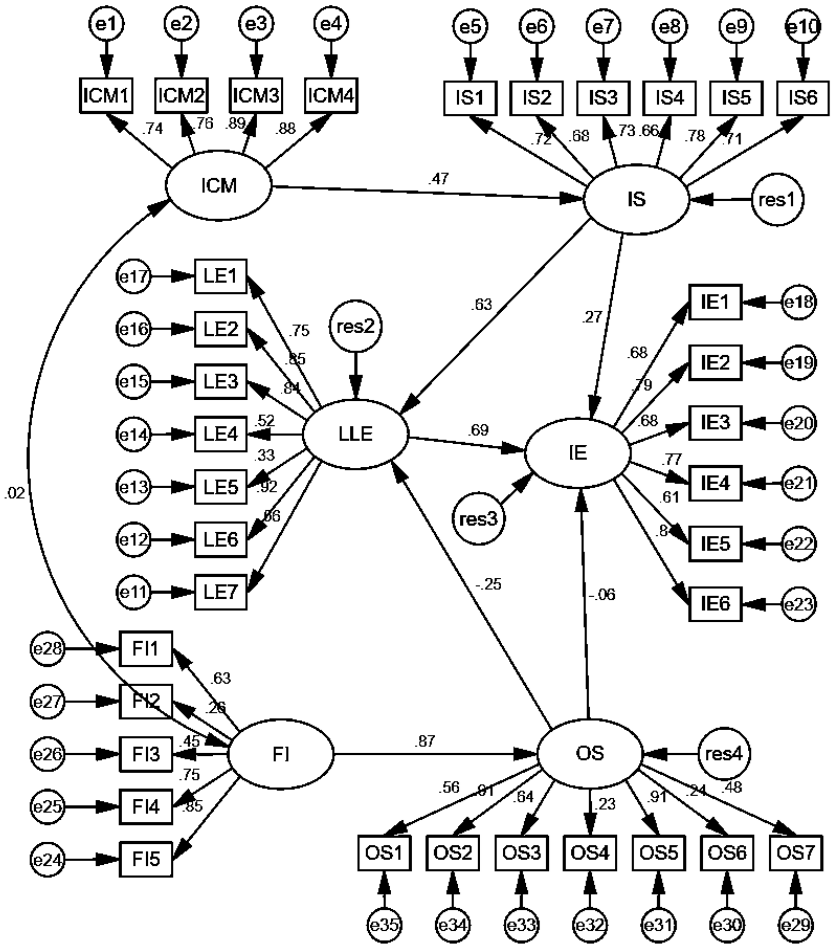

Figure 4.2 AMOS output of estimates of Model 1

Note. Item numbers see Appendix B

As illustrated in Figure 4.3, there were six factors with eigenvalues larger than one. However, the scree plot indicates that from Factor 6 onward, no substantial variance was added. In other words, the two criteria suggest that the number of extracted factors should be five or six.

According to Brown (2009), at times it may be valid for researchers to rely on prior criteria to determine the number of factors to set:

> If the researcher were replicating previous research where a specific number of factors were found, it would make sense to set that same number of factors in the replication research. Similarly, if a researcher has created a set of test or questionnaire items to contain a specific number of subtests or scales, it would make sense to set that same number of factors in the factor analysis of those items. (p. 22)

In the present study, survey items were designed based on the theory of the L2 motivational self system and the questionnaires used in previous empirical studies (Liu, 2014; Papi, 2010; Taguchi et al., 2009; You & Dörnyei, 2016) to test six latent variables, as introduced earlier. Hence, six factors is a better solution in the present study. Table 4.5 shows the rotated factor loadings for each variable (survey item).

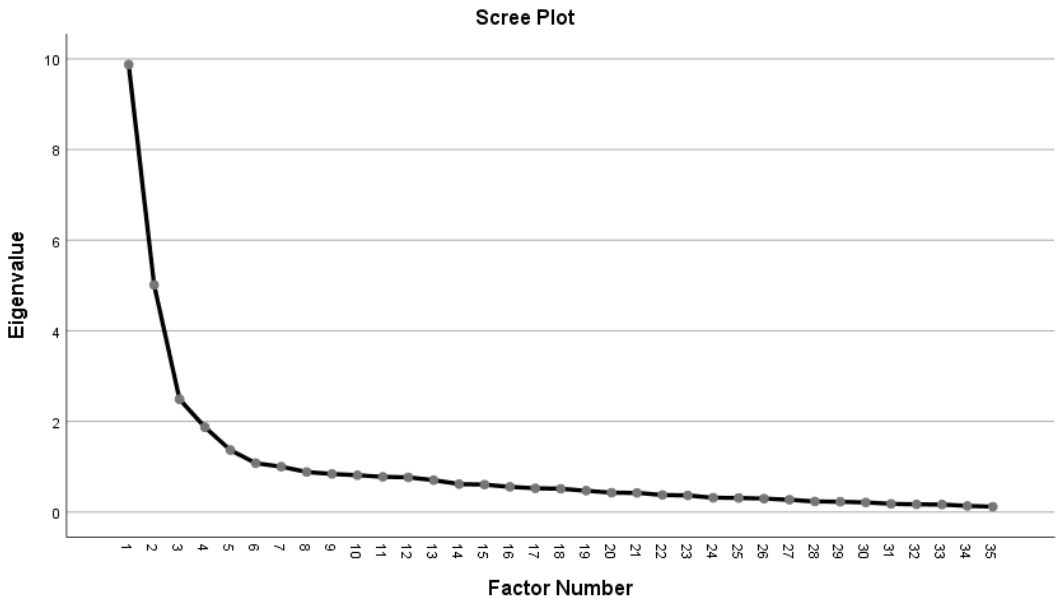

Figure 4.3 Scree plot for Model 1

Table 4.5

Rotated Factor Loadings for Model 1 Items

	Factor						h^2
	1	2	3	4	5	6	
LE1	.621	.018	.038	-.109	-.122	.127	.577
LE2	**.661**	-.079	-.002	-.033	-.052	.206	.696
LE3	**.761**	-.080	.043	-.050	-.047	.093	.727
LE4	.175	.019	-.049	-.219	-.130	.282	.346
LE5	.297	.143	-.235	.036	.074	.073	.205
LE6	**.785**	-.093	.054	-.155	-.030	.076	.850
LE7	.521	.080	-.104	-.162	.057	-.027	.393
FI1	.125	**.667**	.027	.068	-.016	-.015	.428
FI2	-.020	.455	-.154	-.172	.207	.227	.355
FI3	-.027	.451	-.031	.016	.017	-.021	.211
FI4	-.019	**.681**	.020	.018	-.127	-.073	.558
FI5	.010	**.794**	.111	-.042	-.087	-.175	.722
IS1	-.018	.036	-.028	**-.691**	.053	.084	.544
IS2	-.052	.040	-.210	**-.650**	.058	-.002	.535
IS3	.029	-.004	-.026	**-.685**	-.012	.037	.527
IS4	-.029	-.020	-.017	-.436	.039	.395	.490
IS5	.123	-.010	.030	**-.756**	.013	-.022	.638
IS6	.248	-.087	-.049	-.597	-.142	-.090	.534
OS1	-.202	.185	.021	-.101	**-.574**	.051	.462
OS2	-.115	.685	.091	.041	-.296	-.018	.743
OS3	-.068	.198	-.042	-.007	**-.674**	-.065	.604
OS4	.161	-.064	-.010	-.025	**-.549**	-.031	.316
OS5	-.179	.610	.104	-.060	-.384	-.038	.745
OS6	.077	.022	-.133	.120	-.440	.117	.262
OS7	-.055	.249	-.146	.043	-.443	.072	.380
IE1	.407	.005	-.039	-.008	.047	.401	.537
IE2	.306	-.172	-.051	-.224	-.026	.320	.569
IE3	.206	-.035	-.066	-.103	.052	**.452**	.466
IE4	.134	-.071	-.031	.071	-.026	**.832**	.817
IE5	.061	-.112	.067	-.128	-.132	**.547**	.440
IE6	.366	-.052	.022	-.319	-.012	.316	.665
ICM1	-.031	-.054	**-.740**	.042	-.041	.058	.538
ICM2	-.078	-.030	**-.790**	-.060	-.051	-.088	.605
ICM3	.054	-.017	**-.842**	-.044	-.065	.016	.782
ICM4	.024	-.050	**-.856**	-.109	-.032	-.072	.780
%Variance Explained	.271	.131	.061	.040	.024	.018	.544

Note. Item numbers see Appendix B

The rule of thumb regarding the interpretation of factors is that only variables with loadings of .32 and above are interpreted (Tabachnick & Fidell, 2013). Comrey and Lee (1992) suggested that loadings of .71 (50% overlapping variance) or higher can be considered excellent, while .63 (40% overlapping variance) is "very good," .55 (30% overlapping variance) is "good," .45 (20% overlapping) is "fair," and .32 (10% overlapping variance) is "poor." In other words, "The greater the loading, the more the variable is a pure measure of the factor" (Tabachnick & Fidell, 2013, p. 702). Taking all these suggestions of other researchers into account, the current study set the cut-off point for the EFA at .63. As shown in Table 4.5, the number of survey items (i.e., the observed variables) was reduced from 35 to 20. Items FI1, OS1, OS4, IE3, and IE5 were kept to make sure each factor (i.e., the latent variables) has at least three observed variables. The Cronbach's alpha internal consistency reliability coefficients of the remaining items can be found in Table 4.6.

Table 4.6
Cronbach's Alpha of Remaining Items

Factor	Item	α
Ideal L2 self	IS1, IS2, IS3, IS5	.809
Ought-to L2 self	OS1, OS3, OS4	.634
L2 learning experience	LE2, LE3, LE6	.909
Intended effort	IE3, IE4, IE5	.782
Family influence	FI1, FI4, FI5	.789
Instrumentality (China and Mandarin)	ICM1, ICM2, ICM3, ICM4	.885

Note. Item numbers see Appendix B

4.2.2 Modified Model

After the number of observed variables was reduced, the modified model was analyzed through AMOS (see Figure 4.3). Table 4.7 illustrates the AMOS output for parameter estimates of the modified model.

Model Fit Results

Table 4.7 shows the model fit indices of the modified model. The χ^2 value still suggests that the data are significantly different from the hypothesized model ($p < 0.01$), which means that the modified model is not entirely adequate. As explained earlier, χ^2 tends to be statistically significant with a large sample size, because it is very sensitive to sample size (Byrne, 2010). The GFI is .917, which is higher than the cut-off point (.90) and a good fit of the model indicates an acceptable range of model fit (GFI > .90). The value of CFI is .976, which exceeds the cut-off point of .95, indicating an excellent fit. The RMSEA for this modified model is .038, which is smaller than the cut-off point of .05, which is also a good sign of an excellent fit. It is concluded that the modified model fits the data very well.

Table 4.7
Goodness-of-Fit Indices of the Modified Model

	χ^2	*df*	GFI	CFI	RMSEA
Estimate	212.372*	160	0.917	0.976	0.038

* $p < 0.05$

Table 4.8
AMOS output for parameter estimates of Modified Model

			Unstandardized		Standardized	
Parameters			Estimate	S.E.	Estimate	*p*
OS	<---	FI	.250	.057	.641	<.01
IS	<---	ICM	.489	.094	.435	<.01
LLE	<---	IS	.584	.086	.565	<.01
LLE	<---	OS	-.364	.186	-.154	.050
IE	<---	IS	.142	.069	.164	.040
IE	<---	LLE	.571	.077	.685	<.01
IE	<---	OS	-.044	.123	-.022	.722

ICM: instrumentality (China and Mandarin); IS: Ideal L2 Self; LLE:L2 Learning Experience; IE: Intended Effort; FI: Family Influence; OS: Ought-to L2 Self

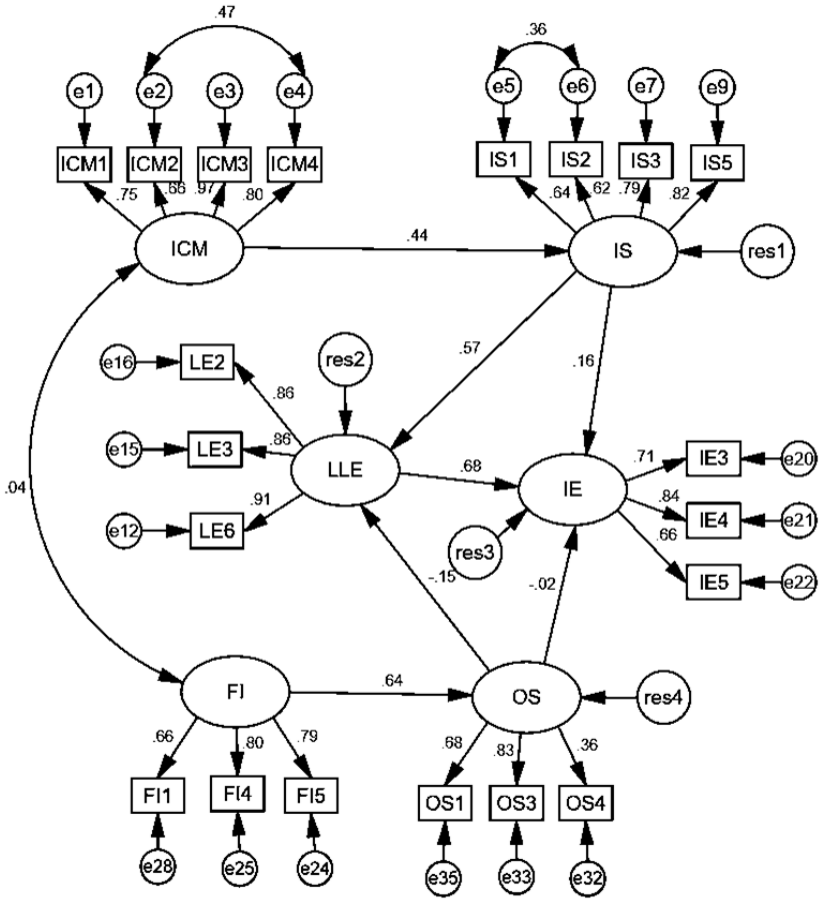

Figure 4.4 Modified Model

Note. Item numbers see Appendix B

As can be seen in both Table 4.8 and Figure 4.4, the largest covariance exists between L2 learning experience and intended effort. The factor loading of the path from L2 learning experience to intended effort was 0.685. The second largest factor loading is the path from family influence to ought-to L2 self. When family influence goes up by one standard deviation, ought-to L2 self goes up by 0.641 standard deviation. The factor loading from ideal L2 self to L2 learning experience is 0.565, which is the third largest covariance. When instrumentality (China and Mandarin) goes up by one standard deviation, ideal L2 self goes up by 0.435 standard deviation. The factor loading of the path from ideal L2 self to intended effort is 0.164 ($p < .05$).

When ought-to L2 self goes up by one standard deviation, L2 learning experience goes down by 0.154 ($p < .05$). In this modified model, the parameter from ought-to L2 self to intended effort is still not significant. Moreover, according to the estimate of squared multiple correlations for latent variables, the predictors of intended effort explain 62.8% of its variance. In other words, the factors of the L2 motivational self system, which in the present study include ideal L2 self, ought-to L2 self, and L2 learning experience of learners of Mandarin, accounted for 62.8% of the variance of intended effort of learning Mandarin. Table 4.9 illustrates the correlation between these three components of the L2 motivational self system and intended effort. As can be seen in the table, ideal L2 self has a strong positive relationship with L2 learning experience, intended effort, and instrumentality (China and Mandarin). Ought-to L2 self has a strong positive relationship with family influence, but no or a negligible relationship with intended effort. L2 learning experience also has a strong positive relationship with intended effort.

Table 4.9
Correlations between motivational factors for all learners

	IS	OS	LLE	IE	FI	ICM
IS	1					
OS	-.052	1				
LLE	.599**	-.041	1			
IE	.615**	-.108	.771**	1		
FI	-.024	.542**	-.081**	-.141**	1	
ICM	.390**	.133*	.310**	.295**	-.123	1

Note. * p < .05; ** p < .01

4.3 Research Question 3

Are there differences between heritage and nonheritage language learners of Mandarin in the motivational factors of ideal L2 self, ought-to L2 self, L2 learning experience, family influence, instrumentality (China and Mandarin), and intended effort?

To answer the third research question, a MANOVA was performed with language background as the independent variable and six motivational variables as the dependent variables to explore any differences across variables between heritage and nonheritage learners of Mandarin. Table 4.10 shows the means (*M*) and standard deviations (*SD*) of the six motivational variables for heritage and nonheritage language learners of Mandarin.

Table 4.10
Descriptive Data of Heritage and Nonheritage Language Learners

Variables	Groups	*n*	*M*	*SD*
Ideal L2 self	Non-heritage	147	4.73	1.02
	Heritage	82	4.27	0.88
	Total	229	4.56	0.99
Ought-to L2 self	Non-heritage	147	2.05	0.75
	Heritage	82	2.74	1.04
	Total	229	2.30	0.92
L2 learning experience	Non-heritage	147	5.03	0.79
	Heritage	82	4.48	0.78
	Total	229	4.83	0.83
Family influence	Non-heritage	147	2.10	0.86
	Heritage	82	3.34	0.92
	Total	229	2.55	1.06
Instrumentality	Non-heritage	147	4.87	1.01
(China and Mandarin)	Heritage	82	4.48	1.17
	Total	229	4.73	1.08
Intended effort	Non-heritage	147	5.01	0.82
	Heritage	82	4.28	0.93
	Total	229	4.75	0.92

As Table 4.10 illustrates, nonheritage learners scored higher on ideal L2 self, L2 learning experience, instrumentality (China and Mandarin), and intended effort whereas heritage learners scored higher on ought-to L2 self and family influence. According to the results of the

MANOVA, significant differences were detected between heritage and nonheritage learners across six factors (including Pillai's trace, Wilks's lambda, Hotelling's trace, and Roy's statistics). ANOVAs was conducted for each dependent variable, with each ANOVA evaluated at an alpha level of . 0017 after a Bonferroni adjustment was applied. The overall conventional alpha level (.01) was divided by the number of variables which is six.

Table 4.11 shows the differences between the heritage and nonheritage language learner groups for the six motivational variables. There was a significant difference between heritage and nonheritage learners on L2 learning experience, $F(1, 227) = 26.038$, $p < .001$, partial $\eta^2 = .103$, with nonheritage learners (M=5.03) scoring higher than heritage learners (M =4.48). A significant difference also reveals between the two groups on Family influence, $F(1, 227) = 104.536$, $p < .001$, partial $\eta^2 = .315$, with heritage learners (M =2.10) scoring higher than nonheritage learners (M =3.34). There was also a significant difference between the two groups on intended effort, $F(1, 227) = 37.440$, $p < .001$, partial $\eta^2 = .142$, with nonheritage learners (M=5.01) scoring higher than heritage learners (M =4.28). Significant differences was also found on ought-to L2 self, $F(1, 227) = 34.209$, $p < .001$, partial $\eta^2 = .131$, with heritage learners (M =2.74) scoring higher than nonheritage learners (M =2.05). A significant difference was also found between the two groups on ideal L2 self, $F(1, 227) = 11.715$, $p = .001$, partial $\eta^2 = .049$, with nonheritage learners (M=4.73) scoring higher than heritage learners (M =4.27). There was not a significant difference between the two groups on instrumentality (China and Mandarin) $F(1, 227) = 6.996$, $p = .009$, partial $\eta^2 = .030$. Table 4.12 and Table 4.13 present the correlations between the six motivational factors for heritage and nonheritage learners, respectively. As the tables indicate, ideal L2 self has strong positive correlations with intended effort in both groups. Ought-to L2 self has no or negligible correlations with intended effort in both groups.

Table 4.11
ANOVA Results of Heritage and Nonheritage Language Learners

Variables		*df*	*F*	*p*	partial eta^2
IS	Between Groups	1	11.715	.001	.049
	Within Groups	227			
	Total	228			
OS	Between Groups	1	34.209	.000	.131
	Within Groups	227			
	Total	228			
LLE	Between Groups	1	26.038	.000	.103
	Within Groups	227			
	Total	228			
FI	Between Groups	1	104.536	.000	.315
	Within Groups	227			
	Total	228			
ICM	Between Groups	1	6.996	.009	.030
	Within Groups	227			
	Total	228			
IE	Between Groups	1	37.440	.000	.142
	Within Groups	227			
	Total	228			

Note. $p < .0017$. The overall alpha level (.01) was divided by the number of variables (6), and alpha was set at $p < .0017$ in order to maintain an experiment-wise alpha level of $p < .01$
ICM: instrumentality (China and Mandarin); IS: ideal L2 self; LLE:L2 learning experience; IE: intended effort; FI: family influence; OS: ought-to L2 self

Table 4.12
Correlations Between Motivational Factors for Heritage Learners

	IS	OS	LLE	IE	FI	ICM
IS	1					
OS	.044	1				
LLE	.470*	.061	1			
IE	.503**	.060	.753**	1		
FI	.219*	.538**	.128	.071	1	
ICM	.424**	.201	.310**	.281*	.380**	1

* $p < .05$; ** $p < .01$
Note. ICM: instrumentality (China and Mandarin); IS: ideal L2 self; LLE:L2 learning experience; IE: intended effort; FI: family influence; OS: ought-to L2 self

Table 4.13
Correlations Between Motivational Factors for Nonheritage Learners

	IS	OS	LLE	IE	FI	ICM
IS	1					
OS	.023	1				
LLE	.621**	.104	1			
IE	.643**	.010	.737**	1		
FI	.168*	.364**	.126	.105	1	
ICM	.340**	.226**	.250**	.231**	.195*	1

* $p < .05$; ** $p < .01$

Note. ICM: instrumentality (China and Mandarin); IS: ideal L2 self; LLE:L2 learning experience; IE: intended effort; FI: family influence; OS: ought-to L2 self

4.4 Discussion

4.4.1 Relationships Between and Among Motivational Factors

Aiming to further test Dörnyei's (2015) L2 motivational self system in the context of learning Mandarin, the present study used SEM to investigate causal relations among motivational factors. Figure 4.4 presents a schematic representation of the final model with standardized path coefficients. By taking a close look at the obtained structural equation model, we may gain insights into the internal structure of the L2 motivational system and become more familiar with the motivational factors of learners of Mandarin in college in the United States. As illustrated earlier, among the three components of the L2 motivational self system, the path from ideal L2 self to intended effort and the path from L2 learning experience to intended effort were found to be significant, which confirms the results obtained in previous studies (e.g., Papi, 2010; Taguchi et al., 2009). The strength of these influences on intended effort is also in line with the findings of these earlier studies in regard to L2 learning experience having the highest impact and being the strongest predictor of intended effort, and ideal L2 self being the second strongest predictor of intended effort. Furthermore, the role that the ideal L2 self plays is two-dimensional

as it also contributes to intended effort indirectly, through impacting the L2 learning experience. It should be noted that the correlation between the ideal L2 self and intended effort is considerably stronger than the causal effect of the ideal L2 self on the same variable in the SEM model. The SEM results suggest that the bulk of this association is mediated through the L2 learning experience variable. Therefore, this finding indicates that, in learning Mandarin, the desired future self does not necessarily result in motivation unless that future self is perceived as "available' and "accessible" (Norman & Aron, 2003; Papi, 2010). In other words, future self-guides need to be provided with appropriate behavioral strategies (Oyserman et al., 2006; Papi, 2010). In terms of learning Mandarin in U.S. colleges, it is possible that difficulties of imagining one's future Mandarin self caused the weaker causal effect of ideal L2 self on intended effort in this study than in previous studies of learning English. As has been mentioned in previous chapters, English is an international language and has the largest population of speakers in the world. It is much easier to find a person speaks perfect English as a L1 or L2 than finding a L1 or L2 speak of Mandarin especially in U.S. colleges. In other words, one of the possible reason why in the current study, in SEM, the ideal L2 self to intended effort has a lower factor loading is because the future Mandarin self not as available or accessible as the future English self in previous studies.

Moreover, the ought-to L2 self also contributes to intended effort indirectly through impacting the L2 learning experience. However, the path from ought-to L2 self to intended effort was found to be nonsignificant, which is also different from the previous studies' findings. The path from ought-to L2 self to L2 learning experience was also nonsignificant, which means the ought-to L2 self has no impact on the L2 learning experience; this finding again differs from those of previous studies.

Recall the definition of the ought-to L2 self from Dörnyei (2009): Ought-to L2 "concerns the attributes that one believes one ought to possess to meet expectations and to avoid possible negative outcomes" (p. 29). English is widely treated as an international language; many people whose L1 is not English consider it a must-know language, and one that connects learners to foreign countries (Yashima, 2009). Knowing English may not only bring more job opportunities but also help people to gain the approval of society, family, or friends. As has been repeatedly pointed out, the explanatory power of the ought-to dimension of the L2 motivational self system has been limited compared to that of the ideal L2 self (e.g., Dörnyei & Chan, 2013; You, Dörnyei, & Csizér, 2016). Dörnyei and Al-hoorie (2017) offered an explanation for this difference:

> Because ought-to self images are externally sourced, they are less internalized than their ideal counterparts; thus, although they may play a role in shaping the learners' motivational mindset, in many language contexts they lack the energizing capacity to make a difference in actual learning behaviors. (p. 460)

For instance, regarding learning English, it seems justifiable to conceive a fairly homogenous ought-to self image, because the societal support surrounding the learning of English is often relatively even and unchanging (Dörnyei & Al-hoorie, 2017). However, learning languages other than English may attract support from some social circles, indifference from others, and perhaps even discouragement from some quarters, such as certain authority figures who consider languages other than English as mere distractions (Dörnyei & Al-hoorie, 2017). Hence, applying the motivational component of the ought-to L2 self to the context of learning Mandarin in the present study led to findings different from those of previous studies.

In light of Dörnyei and Al-hoorie (2017) call to employ more finely tuned instruments and procedures than those that have been applied for exploring motivation to learn English, instrumentality (China and Mandarin) (ICM) was proposed in the present study as a motivational construct that might fully represent the uniqueness of both China and Mandarin. The results from the SEM reveal that ICM is a strong predictor of the influence of ideal L2 self. Furthermore, similar to ideal L2 self, ICM also plays a two-dimensional role as, by contributing to ideal L2 self, it also contributes indirectly to intended effort. In addition, it also has a strong positive correlation with ideal L2 self.

4.4.2 Differences Between Heritage and Nonheritage Learners

As illustrated in the final model (see Figure 4.4), family influence has a strong impact on ought-to L2 self. In the descriptive data of the two groups' motivational factors, the heritage group (M = 3.34) scored higher than the nonheritage group (M = 2.10) on family influence. The MANOVA results revealed a significant difference between heritage and nonheritage learners of Mandarin in the factor of family influence, $F(1, 236) = 120.399$, $p < .001$, partial $\eta^2 = .338$. The effect size for the family influence is large ($\eta^2 = .338$; Cohen, 1988), indicating an important difference between groups with regards to the family influrence. Furthermore, the correlation between family influence and ought-to L2 self for heritage learners (.538) was higher than that for nonheritage learners (.364). Studies have found that the support and encouragement heritage learners of Chinese receive from their family members, relatives, and friends could be identified as a motivational source (Peyton, Ranard, & McGinnis, 2001; Wen, 2011). In addition, it has been found that heritage learners of Chinese consider learning Chinese to be part of their development of their identity, which involves the ought-to L2 self as part of that development (He, 2006; Norton, 2000; Wong & Xiao, 2010). To fill the gap between the current self and the

future ought-to self, heritage learners may need to fulfill the expectations of family members. In other words, family influence is internalized into their intended effort to learn Chinese (Xie, 2011). Wen (2011) also pointed out that heritage learners of Chinese frequently attribute their success in Chinese courses to their language background and family environment.

Significant differences were found between heritage and nonheritage learners on both L2 learning experience, $F(1, 227) = 26.038$, $p < .001$, partial $\eta^2 = .103$; and intended effort, $F(1, 227) = 37.440$, $p < .001$, partial $\eta^2 = .142$. Nonheritage learners (M=5.03; 5.01) scores higher than heritage learners (M =4.48; 4.28) on both variables. The effect size for the L2 learning experience is medium ($\eta^2 = .103$; Cohen, 1988) and the effect size for the intended effort is large ($\eta^2 = .142$; Cohen, 1988), so both indicating important differences between two groups. As can be seen in the descriptive data for these motivational variables, the nonheritage learners scored higher than the heritage learners on both L2 learning experience and intended effort. These results confirm the general assumption in previous studies (e.g., Papi, 2010; Taguchi et al., 2009) and the present study that L2 learning experience has a strong impact on intended effort.

Heritage and nonheritage learners also significantly different on ought-to L2 self, $F(1, 227) = 34.209$, $p < .001$, partial $\eta^2 = .131$, with heritage learners (M =2.74) scoring higher than nonheritage learners (M =2.05). The effect size for ought-to L2 self is medium ($\eta^2 = .131$; Cohen, 1988). Nonheritage learners seldom choose to learn Mandarin to meet expectations for their parents, relatives, or friends (Liu, 2014). Heritage learners, on the other hand, may choose to learn Mandarin due to socio-cultural influences (Wen, 2011). Previous studies also found that heritage learners may study Mandarin to search for their ethnic identities and recover the roots of neglected cultural heritage (Chao, 1997; He, 2008).

No significant differences were found between the two groups for the newly proposed construct of instrumentality (China and Mandarin). As Carreira and Armengol (2001) pointed out, "The expansion of the global marketplace has made proficiency in languages other than English a necessity rather than a luxury" (p. 109). Wong and Xiao (2010) found from interviewing students that heritage learners invest in Mandarin as much because it is a prominent currency in the world economy as because it is the majority language of their ethnicity. Moreover, the emergence of China as a major player in the global economy has had a transformative effect on the Chinese American self-image as well as on overall perceptions of Chinese Americans in American society (Dirlik, 2001, pp. 74–75). Therefore, according to Wong and Xiao (2010), heritage learners may feel that "Mandarin is not only an attribute they 'ought to' possess but also prized capital that can help them to fully realize their goals and reach their ideals" (p. 167).

CHAPTER 5

CONCLUSION

As Dörnyei and Al-hoorie (2017) claimed that, the field of SLA has been characterized by a long standing and deep-seated tension that the undisputed hegemony of Global English has overshadowed the study of languages other than English (LOTE). Boo, Dönyei, and Ryan's (2015) survey of L2 motivation research that were conducted between 2005 and 2014 revealed that during this period, over 70% of all empirical investigations were conducted to examine motivation related to English. Therefore, Dörnyei and Al-hoorie (2017) asked the question that whether we can be certain that "the theoretical paradigms developed over the past 25 years, which have been almost entirely based on the study of English, are applicable to the understanding of the motivation to learn LOTEs " (p. 456).

The variables of Dönyei's (2005, 2009) L2 motivational self system have been tested through many studies conducted with English as a foreign language learners. However, there is a lack of research testing the model with languages other than English. This present study further tests L2 motivational self system in the context of learning Mandarin. The results reveal that among the three motivational factors in L2 motivational self system, L2 learning experience is a strong predictor of the intended effort of learning Mandarin which confirm the findings from previous research which was developed in EFL contexts. Although ideal L2 self was not found a predictor that is as strong as it was in previous studies to predict intended effort of learning Mandarin, it still has a strong impact to the intended effort through L2 learning experience. However, ought-to L2 self is not a very strong predictor to effort of learning Mandarin among U.S. college students who learn Mandarin as a foreign language or heritage language.

Besides testing the validity of the L2 motivational self system, the present study also proposed a new construct that is instrumentality (China and Mandarin) which fulfilled the needs of a motivational construct that may fully represent the uniqueness of both China and Mandarin. Instrumentality (China and Mandarin) has been proved to have a strong predictor to ideal L2 self.

The present study also provides valuable insights by examining possible differences of motivational factors between heritage and nonheritage language learners of Mandarin at the college level in the United States. Based on the available evidence gleaned in the study, it is posited that heritage and nonheritage learners of Mandarin share significant differences in motivational factors. In addition, there are significant differences between two groups on L2 learning experience, family influence, and intended effort. There is no significant differences were found between the two groups on ideal L2 self, ought-to L2 self, and Instrumentality (China and Mandarin).

5.1 Limitation and Future Studies

Although through the analysis of EFA, SEM and MANOVA which belong to pure quantitative research methodology, we have found sufficient results have revealed regarding the motivation of learning Mandarin as a foreign and heritage language. Nonetheless, weaknesses of pure quantitative research methodology is very easy to find. Brown (2014) listed sophisticated strengths and weaknesses for quantitative method as well as qualitative method (pp. 16-18). For instance, “not so exploratory in nature, so researcher may miss phenomena that are not predicted a priori”, “ tends to ignore participants’ individual personal experiences”, “generally limited to describing phenomena, relationships, and differences by considering alternate possible explanations and likelihood of their being true”, etc. Indeed, the present study only illustrates the analysis of different variables but did not demonstrate phenomena plainly through the stories or

other language generated by the participants. Therefore, mixed methods should be employed for future study to reveal more details so that questions such as how heritage and nonheritage learners of Mandarin perceive the construct of ought-to L2 self may be answered.

MacIntyre et al. (2017) observed a strong community-level motive that differed from ideal L2 self in examining the motivational characteristics of heritage language learning in Cape Breton, Canada. As Brown (2014) pointed out qualitative research method is very useful to identify variables. Thus, a possible future study could be employing a mixed method and to test whether the rooted L2 self found by Macintyre et al. (2017) exist among heritage language learners of Mandarin in the United States or explore whether new motivational variables exist in this group.

5.2 Pedagogical Implication

5.2.1 Strategic implications for the ideal L2 self

Among the three motivational components, ought-to L2 self is external to the learner. Thus, it does not lend itself to obvious motivational practices. Ideal L2 self and L2 learning experience have been found to be strong predictors of intended effort. In the present study, ideal L2 self was found to be the second strongest predictor of intended effort. Ideal L2 self contributes to intended effort directly and also indirectly through impacting the L2 learning experience which confirms findings of previous studies. However, the causal effect of ideal L2 self on intended effort in the structure equational model in this study is not as strong as in previous studies. This is because the desired future self does not necessarily result in motivation unless that future self is perceived as "available' and "accessible" (Norman & Aron, 2003; Papi, 2010). As Oyserman et al., (2006) and Papi (2010) suggested, future self-guides need to be

provided with appropriate behavioral strategies. Dörnyei (2009) provided six points regarding the strategic implications for the ideal L2 self:

(1) Construction of the ideal L2 self: creating the vision

(2) Imagery enhancement: strengthening the vision

(3) Making the ideal L2 self plausible: substantiating the vision

(4) Activating the ideal L2 self: keeping the vision alive

(5) Developing an action plan: operationalizing the vision

(6) Considering failure: counterbalancing the vision

Construction of the Ideal L2 Self: Creating the Vision

Apparently, the first and for the most, the future self-guides need to exist. Thus, Dörnyei (2009) suggested to increase the students' mindfulness about the significance of ideal selves, and presenting powerful role models. Oyserman et al. (2006) asked students to introduce each other regarding the skills or ability they possessed, and in the second session students picked photographs that fitted their adult 'visions'.

Imagery Enhancement: Strengthening the Vision

As has been explored in different areas of psychological, educational, and sports research, techniques of creative or guided imagery can be utilized to promote ideal L2 self images and then to strengthen the students' vision (e.g. Berkovits, 2005; Gould et al., 2002; Hall et al., 2006). In psychotherapy, there is a number of different approaches, for instance, the 'positive imagery approach' involves the use of highly, relaxing images to counteract anxiety.

Making the Ideal L2 Self Plausible: Substantiating the Vision

Dörnyei (2009) explained this principle as to make the ideal self-images substantiated. The reason is from the expectancy-value theories of motivation that the greater the perceived likelihood of goal-attainment, the higher the degree of the individual's positive motivation.

Activating the Ideal L2 Self: Keeping the Vision Alive

As for this principle, Dörnyei (2009) suggested language teachers to have classroom activities such as warmers and icebreakers as well as various communicative tasks to keep the vision alive, and invite role models to class, etc. (p. 37).

Developing an Action Plan: Operationalizing the Vision

For this principle, Dörnyei (2009) emphasized that future self-guides are only effective if they are accompanied by a set of concrete action plan. In terms of the concrete action plan, it may include a goal-setting component, an individualized study plan and instructional avenues.

Considering Failure: Counterbalancing the Vision

As pointed out by Oyserman and Markus (1990), the desired self should be offset by the feared self. Therefore, in language teaching terms this would involve regular reminders of the limitations of not knowing languages as well as recurrently priming the learner's ought-to L2 Self by emphasizing the obligations the learners have committed themselves to.

5.2.2 Implications for learning Mandarin

In terms of learning Mandarin, as Norman and Aron, (2003) and Papi (2010) point about that the desired future self of learning Mandarin does not necessarily result in motivation unless it is perceived as something 'available' and 'accessible'. Therefore, helping learners to create their vision is to help them come up with a vision that they can actually see it then work on it. Instructors may ask students to write down and introduce what they want to use Mandarin in the

future in the first class. The students need to provide detailed information. e.g. I want to use Mandarin to read literatures written in Chinese in my field and give presentations in Mandarin to share my research findings. In addition, to help the learners build up a future "vision" of themselves, the instructor may share videos of successful Mandarin learners with students to provide concrete visions. There are many television shows which involve Mandarin learners in China nowadays, and they are easy to access online. Moreover, instructors may also invite successful learners of Mandarin as role models to join classes so that students could actually see and interact with them to get a vivid vision of their possible selves in the future. After finishing what has been mentioned about creating vision, instructors may ask Mandarin learners to either write down or talk about their visions of their future Mandarin self in class. To help the students strengthen their visions, instructors may ask questions based on the descriptions of students so that students may further provide more information. For instance, if a student's vision is studying abroad in a Mandarin speaking country, the instructor may ask questions such as whether the student live with a Chinese roommate, whether they talk in Mandarin every day, whether this Chinese roommate introduce the student to his or her friends who are Mandarin native speakers, etc. Then, to help learners substantiate their visions of future Mandarin selves, the instructor may ask the students to provide detailed information about their visions, and both the instructor and the peers may ask questions. Taking the study abroad as an example again. Sample questions could be which city of China the student would like to live in, or at what year the student would like to study abroad and for how long, etc. After the students build up their future Mandarin selves, instructor may meet with the students to create concrete action plans to help them achieve their future Mandarin selves.

APPENDIX A
SURVEY

Motivation in learning Mandarin as a foreign and heritage language

My name is Chuan Lin, and I am a Ph.D. student at the University of Hawai‘i at Mānoa (UHM). A requirement of my Ph.D. degree program is to conduct a research project. The purpose of my project is to find whether there are fundamental differences among Chinese language learners. Participation in this study will involve the completion of an anonymous survey. I am asking you to participate in this project because you are at least 18 years old and enrolled in Chinese language courses as a student at university.

Project Description – Activities and Time Commitment: Participants will fill out a paper-based survey. Survey questions are primarily multiple choices. However, there will be several opportunities to expand upon your answer with an open-ended narrative response. Completion of the survey will take approximately 15-20 minutes. Around 200 people will take part in this project.

Benefits and Risks: There will be no direct benefit to you for participating in this survey. The results of this project may contribute to a better understanding of the preferences and needs of university students for learning Chinese language. There is little risk or no risk to you in participating in this project.

Confidentiality and Privacy: This survey is anonymous. I will not ask you to provide any personal information that could be used to identify you. Likewise, please do not include any personal information, such as your name, in your survey responses.

Voluntary Participation: Participation in this project is voluntary. You can freely choose to participate or to not participate in this survey, and there will be no penalty or loss of benefits for either decision. If you agree to participate, you can stop at any time without any penalty or loss of benefits to which you are otherwise entitled.

Questions: If you have any questions about this study, you can contact me at 808.308.2925, or chuanlin@hawaii.edu. If you have any questions about your rights as a research participant, you can contact the UH Committee on Human Studies at 808.956.5007 or uhirb@hawaii.edu.

Proceeding to the survey implies your consent.

(Please answer all the questions with *)

Part I Background Information

1. Your Age:* _____
2. Your Gender: *
   - ○ Male
   - ○ Female
   - ○ Prefer not to answer

3. Your Class Level: *
   - ○ Freshman
   - ○ Sophomore
   - ○ Junior
   - ○ Senior
   - ○ Graduate
   - ○ Other: _____
4. Your major(s) *_____ _____

5. Your minor(s) _____
6. Your Birth Country*
   - ○ U.S.
   - ○ China
   - ○ Other: _____
7. If you were not born in the U.S., at what age did you move to this country?

8. What language(s) did you speak at home from birth to 5 years old? (choose all that apply) *
   - ○ English
   - ○ Mandarin
   - ○ Other: _____
9. What is your strongest/dominant language now? (choose all that apply) *
   - ○ English
   - ○ Mandarin
   - ○ Other: _____
10. Check if your parents, grandparents, or anyone else in your immediate/extended family is a native speaker of Mandarin Chinese or a Chinese dialect. (choose all that apply) *
    - ○ Mother
    - ○ Father
    - ○ Maternal Grandparent(s)
    - ○ Paternal Grandparent(s)
    - ○ None
11. At what age did you start to hear or use Mandarin Chinese? *

12. Did you learn Mandarin before entering your university? If yes, please provide the age, length and location of your learning. *

13. Have you visited/lived in a Chinese-speaking country? If yes, please provide your age, length of stay and location of your visit. *

Part II In this part, I would like you to tell me how much you agree or disagree with the following statements.

1. Mandarin would be very useful for me in my future career. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

2. Studying Mandarin is important to me in order to gain the approval of society. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

3. Studying Mandarin is important to me because I think I'll need it for further studies. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

4. I look forward to Mandarin classes. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

5. Studying Mandarin is important to me because I am planning to study abroad. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

6. I have to study Mandarin because, otherwise, I think my parents will be disappointed in me. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

7. I am prepared to expend a lot of effort in learning Mandarin.

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

8. Studying Mandarin is important to me in order to gain the approval of my peers. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

9. I study Mandarin because close friends of mine think it is important. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

10. I would like to study Mandarin even if I were not required.

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

11. Studying Mandarin is important to me in order to gain the approval of my family. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

12. I can imagine myself in the future giving an Mandarin speech successfully to the public in the future. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

13. I really like the actual process of learning Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

14. Studying Mandarin is important to me in order to achieve a personally important goal (e.g. to get a degree or scholarship). *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

15. Studying Mandarin is important to me in order to gain the approval of my teachers. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

16. Studying Mandarin is important to me because my life will change if I acquire good command of Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

17. My dreams of how I want to use Mandarin in the future are the same as those of my parents'. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

18. I found learning Mandarin really interesting. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

19. I can imagine a situation where I am doing business with foreigners by speaking Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

20. I think time passes faster while studying Mandarin than studying other subjects. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

21. I consider learning Mandarin important because the people I respect think that I should do it. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

22. I have support from my Mandarin classmates for my Mandarin study. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

23. My parents encourage me to pursue studying or working abroad opportunities in Mandarin-speaking countries or areas. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

24. Learning Mandarin is important to me because Mandarin is one of the most spoken languages in the world. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

25. I have siblings or relatives who study Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

26. Even if I failed in my Mandarin learning, I would still work hard to learn Mandarin.

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

27. I can feel a lot of pressure from my parents when I'm learning Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

28. Learning Mandarin is important to me because Mandarin is one of the most important languages in the world. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

29. I can imagine myself in the future having a discussion in Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

30. I really enjoying learning Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

31. I can imagine myself studying in a university where all my courses are taught in Mandarin. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

32. Learning Mandarin is important to me because China is getting very important economically. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

33. I have good Mandarin teacher(s) to help me with my Mandarin study. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

34. I would like to spend lots of time studying Mandarin.

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

35. Learning Mandarin is important to me because China has an important role in the world. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

36. I can imagine myself living abroad and using Mandarin effectively for communicating with the locals. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

37. If my Mandarin teacher would give the class an optional assignment, I would certainly volunteer to do it.

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

38. My image of how I want to use Mandarin in the future is mainly influenced by my parents. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

39. I can imagine myself speaking Mandarin with friends or colleagues. *

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

40. If Mandarin course was offered in the future, I would like to take it.

	1	2	3	4	5	6	
Strongly disagree	○	○	○	○	○	○	Strongly agree

The End

Thank you very much for participating in this research! 谢谢 !

APPENDIX B

SURVEY ITEM NUMBERS

L2 learning experience (LE)	LE1	4	I look forward to Mandarin classes.
	LE2	13	I really like the actual process of learning Mandarin.
	LE3	18	I found learning Mandarin really interesting.
	LE4	20	I think time passes faster while studying Mandarin than studying other subjects.
	LE5	22	I have support from my Mandarin classmates for my Mandarin study.
	LE6	30	I really enjoying learning Mandarin.
	LE7	33	I have good Mandarin teacher(s) to help me with my Mandarin study.
Family influence (FI)	FI1	17	My dreams of how I want to use Mandarin in the future are the same as those of my parents'.
	FI2	23	My parents encourage me to pursue studying or working abroad opportunities in Mandarin-speaking countries or areas.
	FI3	25	I have siblings or relatives who study Mandarin.
	FI4	27	I can feel a lot of pressure from my parents when I'm learning Mandarin.
	FI5	38	My image of how I want to use Mandarin in the future is mainly influenced by my parents.
Ideal L2 self (IS)	IS1	12	I can imagine myself in the future giving an Mandarin speech successfully to the public in the future.
	IS2	19	I can imagine a situation where I am doing business with foreigners by speaking Mandarin.
	IS3	29	I can imagine myself in the future having a discussion in Mandarin.
	IS4	31	I can imagine myself studying in a university where all my courses are taught in Mandarin.
	IS5	36	I can imagine myself living abroad and using Mandarin effectively for communicating with the locals.
	IS6	39	I can imagine myself speaking Mandarin with friends or colleagues.
Ought-to L2 self (OS)	OS1	2	Studying Mandarin is important to me in order to gain the approval of society.
	OS2	6	I have to study Mandarin because, otherwise, I think my parents will be disappointed in me.
	OS3	8	Studying Mandarin is important to me in order to gain the approval of my peers.
	OS4	9	I study Mandarin because close friends of mine think it is important.
	OS5	11	Studying Mandarin is important to me in order to gain the approval of my family.
	OS6	15	Studying Mandarin is important to me in order to gain the approval of my teachers.

	OS7	21	I consider learning Mandarin important because the people I respect think that I should do it.
Intended effort (IE)	IE1	7	I am prepared to expend a lot of effort in learning Mandarin.
	IE2	10	I would like to study Mandarin even if I were not required.
	IE3	26	Even if I failed in my Mandarin learning, I would still work hard to learn Mandarin.
	IE4	34	I would like to spend lots of time studying Mandarin.
	IE5	37	If my Mandarin teacher would give the class an optional assignment, I would certainly volunteer to do it.
	IE6	40	If Mandarin course was offered in the future, I would like to take it.
Instrumentality (China and Mandarin) (ICM)	ICM1	24	Learning Mandarin is important to me because Mandarin is one of the most spoken languages in the world.
	ICM2	28	Learning Mandarin is important to me because Mandarin is one of the most important languages in the world.
	ICM3	32	Learning Mandarin is important to me because China is getting very important economically.
	ICM4	35	Learning Mandarin is important to me because China has an important role in the world.
Instrumentality (promotional) (IP+)	IP+1	1	Mandarin would be very useful for me in my future career.
	IP+2	3	Studying Mandarin is important to me because I think I'll need it for further studies.
	IP+3	5	Studying Mandarin is important to me because I am planning to study abroad.
	IP+4	14	Studying Mandarin is important to me in order to achieve a personally important goal (e.g. to get a degree or scholarship).
	IP+5	16	Studying Mandarin is important to me because my life will change if I acquire good command of Mandarin.

APPENDIX C

THE DESCRIPTIVE STATISTICS OF SURVEY ITEMS

n = 235 Survey Items	*Min*	*Max*	*Mean*	*SD*	Skewness SE=0.159	Kurtosis SE=0.316
LE1	1.00	6.00	4.9362	1.07426	-.915	.297
LE2	1.00	6.00	4.7277	1.20995	-.763	.097
LE3	1.00	6.00	5.0553	1.09443	-1.097	.744
LE4	1.00	6.00	4.0979	1.39711	-.261	-.823
LE5	1.00	6.00	4.5362	1.17750	-.618	.115
LE6	1.00	6.00	5.0553	1.10221	-.999	.349
LE7	2.00	6.00	5.3787	.86056	-1.465	1.928
FI1	1.00	6.00	2.3277	1.41689	.923	.046
FI2	1.00	6.00	3.8553	1.68335	-.361	-1.070
FI3	1.00	6.00	2.6085	1.99356	.731	-1.136
FI4	1.00	6.00	2.0085	1.28433	1.095	.125
FI5	1.00	6.00	2.1660	1.50289	1.024	-.227
IS1	1.00	6.00	3.8681	1.57831	-.221	-1.123
IS2	1.00	6.00	4.7191	1.30656	-1.032	.535
IS3	2.00	6.00	5.4340	.83648	-1.535	1.944
IS4	1.00	6.00	3.3617	1.71252	.166	-1.208
IS5	1.00	6.00	5.0426	1.17228	-1.303	1.180
IS6	1.00	6.00	4.9660	1.17983	-1.083	.581
OS1	1.00	6.00	2.7617	1.36916	.428	-.578
OS2	1.00	6.00	1.9106	1.37301	1.381	.690
OS3	1.00	6.00	1.7660	1.09022	1.415	1.309
OS4	1.00	6.00	2.0426	1.23961	1.086	.456
OS5	1.00	6.00	2.0553	1.47672	1.189	.097
OS6	1.00	6.00	3.0766	1.57792	.222	-1.080
OS7	1.00	6.00	2.7191	1.55451	.484	-.978
IE1	2.00	6.00	4.9830	.99127	-.736	-.140
IE2	1.00	6.00	5.1234	1.18289	-1.257	.668
IE3	2.00	6.00	4.7489	1.15874	-.661	-.369
IE4	1.00	6.00	4.5574	1.26081	-.692	-.120
IE5	1.00	6.00	3.9277	1.32976	-.163	-.542
IE6	1.00	6.00	5.1191	1.14478	-1.304	1.179
ICM1	1.00	6.00	4.8255	1.19086	-1.128	.976
ICM2	1.00	6.00	4.5106	1.41832	-.901	-.008
ICM3	1.00	6.00	4.7404	1.21804	-.850	.179

ICM4	1.00	6.00	4.8255	1.22970	-1.109	1.076
IP1	1.00	6.00	5.0809	1.01582	-1.076	.989
IP2	1.00	6.00	4.1574	1.47511	-.468	-.629
IP3	1.00	6.00	4.0681	1.71333	-.379	-1.129
IP4	1.00	6.00	4.6000	1.34673	-.776	-.121
IP5	1.00	6.00	4.2000	1.37995	-.424	-.599

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